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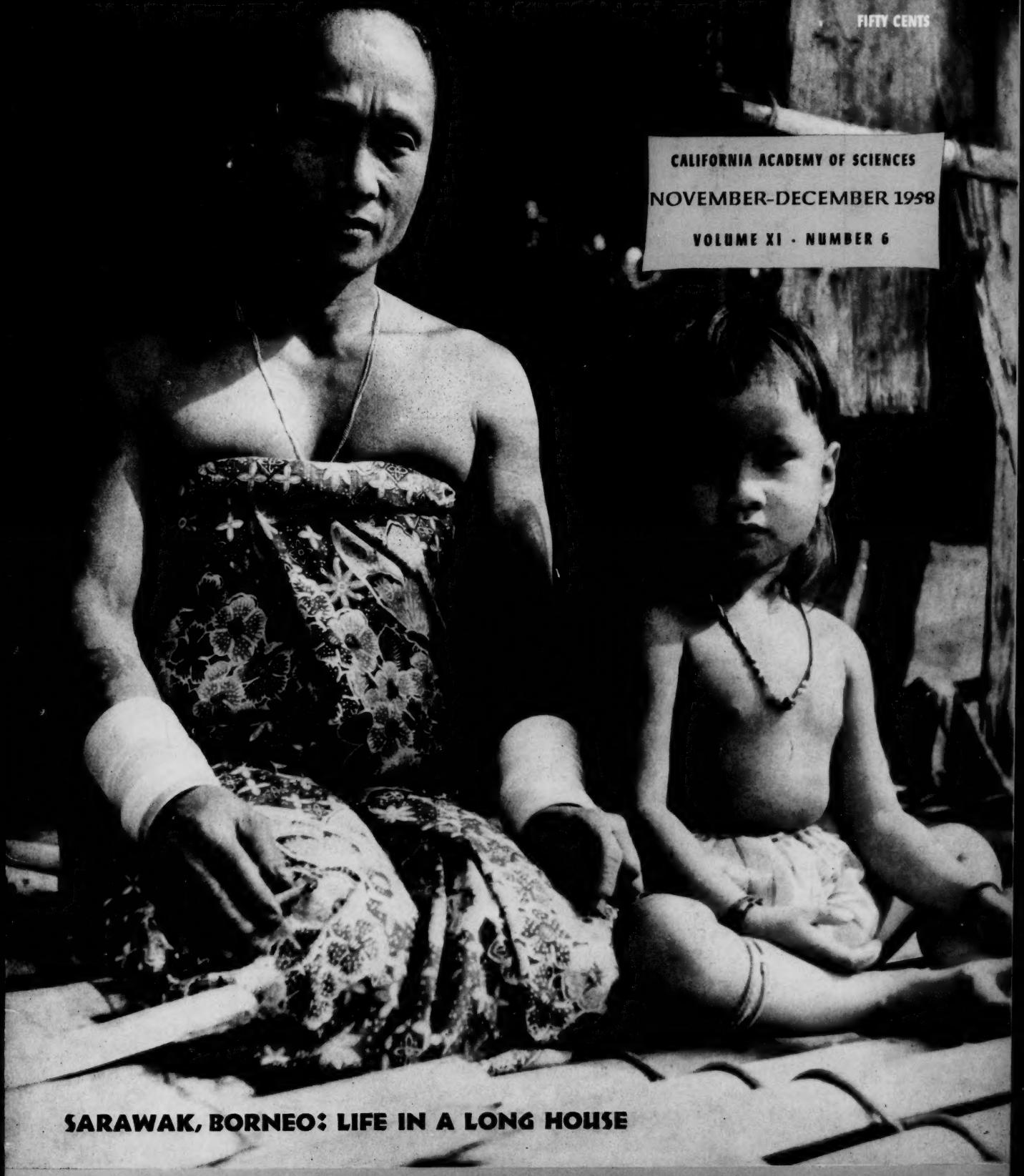

SARAWAK, BORNEO: LIFE IN A LONG HOUSE

VOLUME XI • NUMBER 6
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PACIFIC DISCOVERY

IN THIS ISSUE

PRE-DISCOVERY

AFTER COMPILING THE INDEX—a tedious and necessarily in part a last-minute job, which this time two kind and dear friends, Nancy and Larry Gapinski, worked patiently on with us—we are glad to make PRE-DISCOVERY the shortest yet. We are pleased to welcome a new member to our panel of Associate Editors, an old friend and sometime contributor to *PD*, **Joel W. Hedgpeth.** Marine biologist and battler for conservation, Dr. Hedgpeth is Director of the Pacific Marine Station at Dillon Beach, Marin County, a teaching and research activity of the College of the Pacific.

PD'S AUTHORS

THE RESPECTED NEWSCASTER **Eric Sevareid** is not alone, we feel sure, in his misgivings about the spirit in which the atomic powers are blasting off for the moon and Mars (the planet figures in a headline on the streets the very day this is going to press). "*Me-first*ism" is kid stuff. Played with rockets and "blunt-nosed missiles"—are we thinking it through? . . . ¶ **Jay C. von Werlhof,** instructor in the California School of Fine Arts, San Francisco, follows his "Granite Galleries" (July-August 1958) with a study of one mode of "California living" which had its advantages. . . . ¶ The West was won as much by the collecting-kit as by the rifle, as **Dr. Richard G. Beidleman,** assistant professor of zoölogy in Colorado College, shows in his brief account of the life and times of William Gambel. Neither he nor the editors claim certainty for the "Rose's Bar" site of Gambel's untimely death. New information may come via some reader, we hope. . . . ¶ San Francisco's Sutro Librarian, **Richard Dillon,** finds his archives full of intriguing bits and pieces of natural history. This of the bison is one of several to come. . . . ¶ Last January we sat down somewhere in Manila with a camera-totin' young Californian, **Clifford V. Harrington** by name, who undertook to fill one of the gaps in our own island-hopping itinerary. Cliff reported in this fall with the stuff—from Borneo—and with his head still on. . . . ¶ Academy TV-IP **Benjamin Draper** got the idea for a Pacific Profile when his genial snake-expert subject, Laurence M. Klauber, appeared on our show "Science in Action." . . . ¶ Well, **George W. Bunton,** Morrison Planetarium manager and Astronomy curator, returned safely from the Danger Islands shaded with a healthy tan—acquired *before* Eclipse Day!—but with no shadow-band data, alas. Next time he'll make his own eclipse, in the Planetarium. D.G.K.

THE COVER

Iban mother and child, Sarawak, where long-house life is lived in peace and gayety beneath the trophies of one-time head-hunting. Photograph by Clifford V. Harrington *(see pages 16-24).*

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EDITORIAL

BE CAREFUL WITH THE MOON!

THE LOVELY and luminous moon has become a public issue. For quite a few thousand years it was a private issue; it figured in purely bilateral negotiations between lovers; poets from attic windows issued the statements about the moon, and they made better reading than the handouts now being issued by assistant secretaries of defense.

The moon was always measured in terms of hope and reassurance and the heart pangs of youth; it is now measured in terms of mileage and foot-pounds of rocket thrust. Children used to send sharp, sweet wishes to the moon; now they dream of blunt-nosed missiles.

There must come a time, in every generation, when those who are older secretly get off the train of progress, willing to walk back to where they came from. We're afraid we're getting off now. Cheer, if you wish, the first general or Ph.D. who splatters something on the kindly face of the moon. We shall grieve for him, for ourself, for the young lovers and dreamers to come; for the ancient moon will never be the same again. Therefore the heart of man will never be the same.

We find it easy to wait for the first photographs of the other side of the moon, for we have not yet seen the other side of Lake Louise. We find ourself quite undisturbed about talk of "controlling the earth from the moon," because we do not believe it. If men cannot control the earth from the earth, we fail to see how they will do so from the moon.

It is exciting talk, indeed, the talk of man's advance toward space. But one little step in man's advance toward man – that, we think, would be truly exciting.

There is after all another side, a dark side, to the human spirit, too. Men have hardly begun to explore these regions; and it is going to be a great pity if we advance upon the bright side of the moon with the dark side of ourselves, if the cargo in the first rockets to reach there is fear and chauvinism and suspicion. Surely we ought to have our credentials in order, our hands clean and perhaps a prayer for forgiveness on our lips as we prepare to open the vault of the shining moon.

Condensed from a recent CBS News broadcast by Eric Sevareid, reproduced by the courtesy of Reader's Digest

ART IN THE NATURAL HISTORY OF MAN

Bambara dance headdress, Africa. The idea of increase which underlies all these Chi wara carvings is here perhaps translated into artistic form with especial subtlety. (Photo by Eliot Elisofon from *The Sculpture of Africa*, Frederick A. Praeger, New York)

WHAT KIND of animal is man? Is he a social animal? A predatory, omnivorous, aggressive, intelligent, warm-blooded, tool-using, speech-powered animal? He is any one or all of these things, of course, according to what is being said about him at the moment. These are all biological facts about the species *Homo sapiens* which would be cited in an account of its animal natural history. These same facts fit countless other animal species also, most of them obviously, others less so—relatively few people know that some birds and even insects make use of twigs or pebbles to perform certain acts; only a handful of observers claim the true power of speech for any animal below man. Conceding these last two, we must then think in terms of differences of degree in biological attributes, one set of degrees toting up as man, another as manatee. Without pausing to analyze the fact of intelligence for components which weigh qualitatively as well as quantitatively on the side of man, over manatee, we wish to peg down here one fact about man that is, we believe, not commonly cited as a *biological* distinction separating him from other animals. It is that man is an artistic animal. Art, we submit, not only takes a high and critical place in the book of man's natural history, but it comes into the earliest pages.

"From at least the beginning of the Pleistocene onward," the anthropologist Carleton Coon tells us in *The Story of Man*, "man has been a cultural animal, and his physical and cultural remains are parts of a single picture." Even while that other human species recognized as Neanderthal man still walked the early Pleistocene earth with him, "Homo sapiens had long been flaking hand axes *aesthetically*" (italics ours), Dr. Coon states. In other words, H. sapiens was an artist even before he inherited the earth as its only species to be called human, if by artist we mean—at this stage—a being who is not satisfied with passable utility alone in an object of his making for a purpose but needs to improve it, and so increase his pleasure in it, through design and skilful execution.* (This presuposes that the esthetic sense dawned in the long-since universal appeal of a right-looking and -feeling handtool, rose in the awareness of nature and the ineffable mysteries of life, and finally set, for some societies, in art-for-art's-sake—if we may close this parenthesis with an aside.) First, the artist. Then, as it seems suddenly, Art appeared in the world, the kind we distinguish with a capital.

Sudden was our modern discovery of ice-age art, at any rate—"one of the greatest surprises ever experienced by students of art history," Johannes Maringer and Hans-Georg Bandi declare in *Art in the Ice Age*. "For suddenly out of the dark womb of the earth, from pitch-dark chambers in caverns sealed by nature for thousands of years, arose a totally unknown and undreamt-of art of admirable beauty and variety, . . . an art which set the birth of artistic creation thousands of years before the art of Egypt or the Near East."

Dordogne, Altamira, and the rest are now part of the standard repertoire of our art heritage. To the caves must be added the equally remarkable rock-painting sites of Africa, particularly that of the exquisite White Lady in Damaraland with whom the Abbé Breuil, greatest of cave art discoverers, opens his *Four Hundred Centuries of Cave Art* on a note of sheer ecstasy. Since the finest products of this earliest known epoch in world art history remain unsurpassed under all valid esthetic comparisons, we rest the case for man's being as naturally an art-making animal as he is a hunting, thinking, or tool-using animal, and go on to look at the kinds of art generally called—with or without condescension—primitive: that is, the arts of primitive

* Upjohn, Wingert, and Mahler have expressed the aboriginal esthetic drive very clearly in their *History of World Art:*

"A fundamental human demand calls art into being. Its primary purpose is to add to the interpretation and completeness of life. . . . Man's craving for art is very deep-rooted; it has appeared continuously since prehistoric days throughout the world. All that we know of early man, except what may be gleaned from his bones, is learned from his handicrafts. These reveal his desire to add something to his tools beyond pure utility. To adorn them cost him time and effort, but only under the lash of necessity has humanity been willing to forgo the pleasure it gains by seeing and handling well-made objects that not merely satisfy their practical purpose but in addition delight the hand and eye, the mind and soul."

peoples (not to be confused with the Grandma Moses kind of thing).

Erwin O. Christensen gives in the Introduction to his *Primitive Art* a partial definition: "Primitive art is produced by people who have not developed any form of writing. The word 'primitive' applied to art commonly means Negro African sculpture, aboriginal American art, the arts of the South Seas, and other tribal arts in different parts of the world." The important thing is that all these are no longer held outside the mainstream of man's artistic endeavor. In their *History of World Art* three Columbia University fine arts professors, Everard M. Upjohn, Paul S. Wingert, and Jane Gaston Mahler have duly recognized the "belonging" of the so-called primitive arts, both in their general considerations and in specific chapters of a commendably complete text (if the present writer recalls correctly, no such proportionate recognition was given these components of world art in art history texts of his undergraduate days).

Since primitive art has won its spurs, so to speak, we have been rewarded by a rich feast of lavish books explaining and displaying it. No greater stir has been made than that by African sculpture, with a consequent harvest of museum collections and expensive books. The latest and perhaps the best of these volumes comes to hand as this is written. It is *The Sculpture of Africa*, a splendid portfolio of photographs by Eliot Elisofon with an expert text by William Fagg. The average reader, while losing himself in the compelling fascination of the more than 300 examples so skilfully portrayed, may have little interest in the exhaustive discussion of differences between Dogon, Yoruba, Benin, Bakwele, Mangbetu, Barotse, and a couple of dozen other tribal styles, as the student or collector will. But we would recommend to everyone who is attracted to the "primitive arts in general the late Ralph Linton's Preface in which the eminent anthropologist has set forth once and for all the right-thinking approach to and appreciation of them, pointing out fallacious ideas which have arisen from the application of the tag "primitive." Here is presented a clear and vital corrective—and about time!

The inescapable drive toward artistic creation is nowhere more sharply illustrated than in the case of the extremely primitive men who during thousands of years straggled across from Asia to people the Americas. Starting from absolute cultural scratch they achieved a volume and variety of artistic production which staggers the imagination. And they did it—it is generally agreed—in a state of complete isolation from the rest of the world. The peaks of this production appear in the great centers where civilizations rose upon stabilized bases of agriculture—in South America between the Andes and the ocean, on the plateau of Mexico, in the Isthmus of Tehuantepec, in Yucatan.

Each region developed its arts according to the nature of land, resources, and people. The Andes, as we may see through *The Art of Ancient Peru* by Heinrich U.-Doering, produced a textile industry unequaled by that of any ancient area of the world; superlative ceramic and metal crafts; and architectural masonry which is awesome in its daring of conception and mastery of execution. These are splendidly illustrated in this book.

Turning to North America, we come again to painting, which is for so many of us today the capital Art, and the one least known for pre-Columbian America. Volume X of the magnificent Unesco World Art Series, *Mexico: Pre-Hispanic Paintings*, presents in its large format and fine reproduction 32 of the most outstanding examples so far discovered in the ancient sites of the Teotihuacán, the Toltec-Aztec, and the Classical Mayan periods. We marvel at the design, detail, and color of these masterful murals which lose nothing in comparison with those of medieval Europe or the Orient. Caves, temples, churches, palaces—in all ages, the world around, man has had to pour out upon their walls the highest expressions of his artistic nature.

To close this brief essay, let us turn the globe to the Far East and another independent tradition of art as seen in *An Introduction to the Arts of Japan*. Here Peter C. Swann considers the many centuries in the creative life of one of the most artistically gifted peoples the world has known. Japanese art is a prime example of the intimate relationship of art with religion, and its beginnings are found in the Stone Age even though it took much in historic times from China. "Shintoism," Swann points out, "is a religion of love and gratitude rather than of fear—in particular, gratitude for the gifts of a kindly nature. It is the awareness of the myriad spirits in nature combined with an appreciation of nature's kindness which has given the Japanese a sense of the beauty and friendliness of their picturesque islands." In this perhaps is one key to the part of man's innermost nature which since the beginning of his time has sought expression in art. Man has *had* to be an artist. D.G.K.

The book data

History of World Art. By Everard M. Upjohn, Paul S. Wingert, and Jane Gaston Mahler. Second edition: revised and enlarged. Oxford University Press, New York. 1958. xix +876 pp., 702 halftone and line illustrations, 17 full-color plates. $12.00.

The Sculpture of Africa. By Eliot Elisofon. Text by William Fagg. Preface by Ralph Linton. Design by Bernard Quint. Frederick A. Praeger, New York. 1958. 256 pp., 405 photographs, endpaper map. $15.00.

Unesco World Art Series: Vol. X. Mexico: ***Pre-Hispanic Paintings.*** Preface by Jacques Soustelle. Introduction by Ignacio Bernal. The New York Graphic Society (by arrangement with Unesco), Greenwich, Connecticut. 1958. 25 pp. + 32 full-color plates. $18.00.

The Art of Ancient Peru. By Heinrich Ubbelohde-Doering. Frederick A. Praeger, New York. 1954. 55 text pp. + 4 full-color plates, 240 pp. of halftone photographs, several line drawings. $12.50.

An Introduction to the Arts of Japan. By Peter C. Swann. Frederick A. Praeger, New York. 1958. xi + 220 pp., frontis. in full color, 168 halftone figs. $8.50.

NOTE: *The Story of Man, Art in the Ice Age, Four Hundred Centuries of Cave Art,* and *Primitive Art* have been discussed or reviewed in previous issues.

JAY C. VON WERLHOF

END OF AN EON

DRAWINGS BY JUDITH VON WERLHOF

TWO YEARS AGO the Tachi tribe came to an official end. The chief died, and it had been decided at the last council meeting, held several years before, that another would not take his place. Only 56 people were left in this California tribe which at one time numbered about 5,000. It had been the largest tribe in the Yokut nation.

A few miles from the Tachi Indian reservation near Lemoore in Kings County, an airbase is being built. In 184 years, from the time the first white men encountered these Indians, the Tachi country passed from the stone age into the jet age. The Indians were more than just bewildered by the change.

When, or from where, the Tachi came is not known. This part of the San Joaquin Valley was probably settled by 1500 B.C., however, and there is evidence that the migrants had come from the Southwest. If so, they probably crossed from Nevada, and at several points along the Sierra.

The Yokut tribes inhabited the greater part of central California, including the foothill country on both sides of the Valley. They were linguistically related, much as the English and French are. In spite of cultural relationships with other Yokut peoples the Tachi remained independent as a tribe. Trade was carried on between neighboring tribes but little need or desire existed for political affiliation. The Yokuts were peaceful natives, an observation often noted by early white settlers who had grown accustomed in the Westward push to be on guard against Indian savagery. There was no word in the Tachi vocabulary for "war."

The center of Tachi life was the permanent townsite of Oudjiu. Sometimes called We-Kit-Lee-Wis ("cut in many pieces") the site of this central town was 6 miles northeast of Coalinga in Fresno County. The area is now dry and dotted with sage and tumbleweed. But at one time it was green. The large gully running alongside the townsite, the present Arroyo Poso de Chane, was the emptying ground for waters coming from the hills. The canyons of Los Gatos, Warthan, Jacalitos, and Zapato dovetail into this valley sink. A long but not deep finger-lake was kept filled during the year by winter's rain and natural springs.

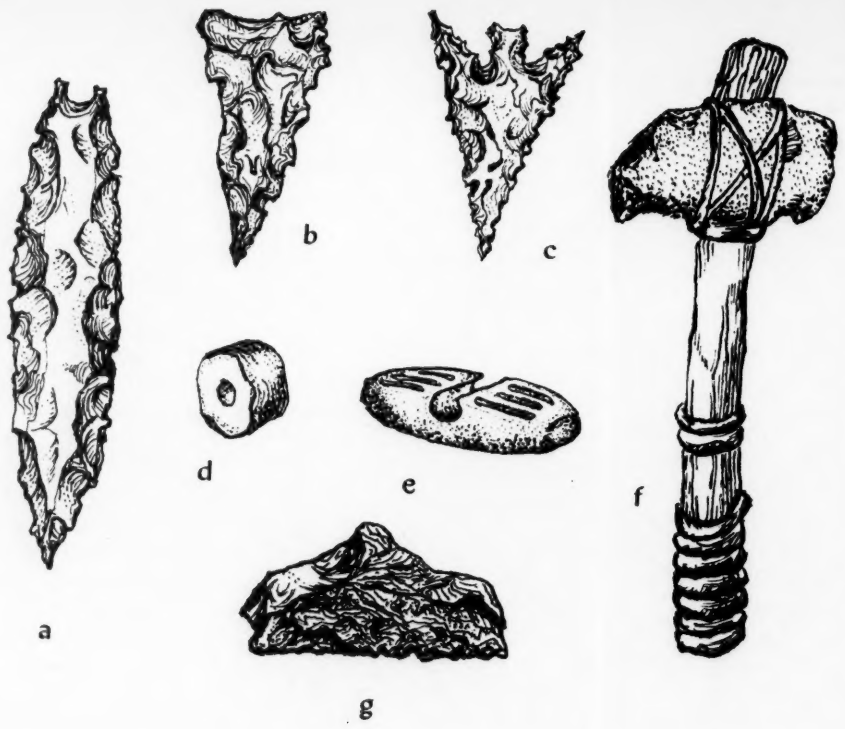
The Spanish removed tribesmen by the hundreds to help build coastal missions, and Oudjiu was abandoned in the late 18th century. On its site a small Spanish village was built, called Poso ("pool") de Chane. This spot provided a stopping place and supply center along an oxen road, now called El Camino Viejo, used by the Spanish as early as 1800. The settlement was wiped out by a flood in 1862, and never rebuilt. The flood also changed the contour in the arroyo, destroying the barriers which had retained the waters from the canyons. The area dried up.

The Tachi maintained another village, Waiu, located near their present reservation, the Santa Rosa Rancheria. This site was kept by those who hunted and fished along the northern shores of the now defunct Tulare Lake. Other sites were inhabited only seasonally, as at Polvadero, Lost Hills, Avenal, and Sunflower Valley. Lack of water kept the Indians in the hills, the valley sink, or along Tulare Lake during the summer months.

On the northeastern border of the Tachi country was Fish Slough. This was one of the main streams from, and into, the Tulare Lake basin. The lake was a drainage basin for several small bodies of water, including the Kings and Tule rivers. In 1865 the lake reached its zenith, covering the present townsite of Corcoran, and extending 35 miles in width by 60 miles in length. To the Tachi it was a supermarket. Ho-En-Nick, a now deceased dignitary of the tribe, told this writer that "long time way back, the lake was full of much fish, much bird, much mosquito." The insects bred in the thick growth of tule that surrounded the shallow rim of the lake. Pedro Fages, the first white man to visit the Tachi country, saw the lake in 1772. He appropriately named the vast marshland Los Tulares ("the place of tules").

The Tachi depended on the lake for supplies of fish, birds, animals, and water. They built boats

THE TACHI TERRITORY lay within the bounds indicated by the band of shading on this map. The map plate is a mosaic of parts of four sheets in the topographic series of the Western United States at the original scale of 1:250,000 (here reduced to one half size, or a scale of 1:500,000): Army Map Service series V502 (for sale by the U.S. Geological Survey). The four sheets used in part were Santa Cruz, Fresno, San Luis Obispo, Bakersfield, the Tachi story and insert added.



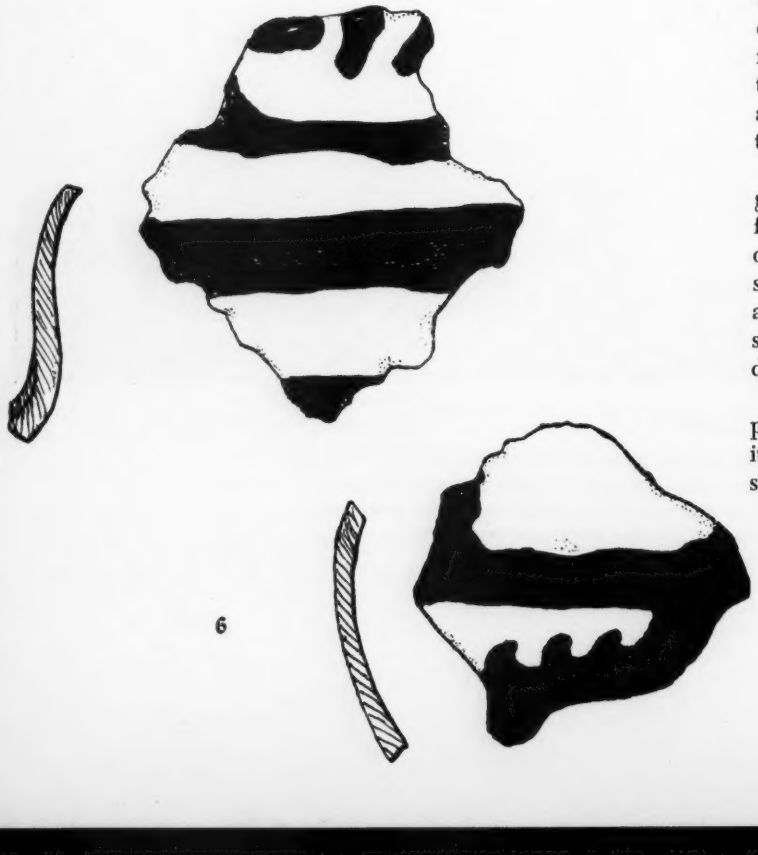
Tachi implements: *a*, 8-inch spear point, Oudjiu; *b*, *c*, stone points, Jacalitos Canyon. Despite a volcanic past, the Tachi territory has no obsidian deposits, the Tachi trading with other tribes for this material. Large quantities of flake in Jacalitos prove that the Tachi got obsidian in bulk and made their own points, awls, scrapers, etc., but most of their points are stone. They were fixed to shafts with the asphaltum found in abundance in Tar Canyon near Avenal, and then bound. *d*, an arrow-shaft tool through which the shafts were run and rolled around the rims to remove rough places; *e*, arrow straightener, Jacalitos Canyon; of steatite, with incised parallel lines; shafts were worked against the warped joint in the groove; *f*, hatchet, Oudjiu, handle partly decayed but reed bindings still fair; *g*, hide scraper, delicately made from stone; the serrated edge removed tissue from hides before tanning.

and rafts of reed, some reaching 60 feet in length. Whole families lived on the larger vessels for weeks at a time. Cooking was done over a clay hearth constructed in the center of the craft. Poles would be used to maneuver the rafts, and for shelter a lean-to would be built.

Fish were caught several ways. Some were shot with an arrow or were speared, and retrieved by a swimmer. Others were caught in nets. Some were caught with bait on wooden or bone hooks attached to a long line anchored in place by stone weights. Few devices for snaring birds were learned by the Tachi. They had to depend mainly upon their marksmanship with arrows, the points of which were widely flared to prevent the shaft from passing through the game or tearing apart the meat. Large game also lived around the lake, as attested by the 8-inch spear points found on the ancient shores.

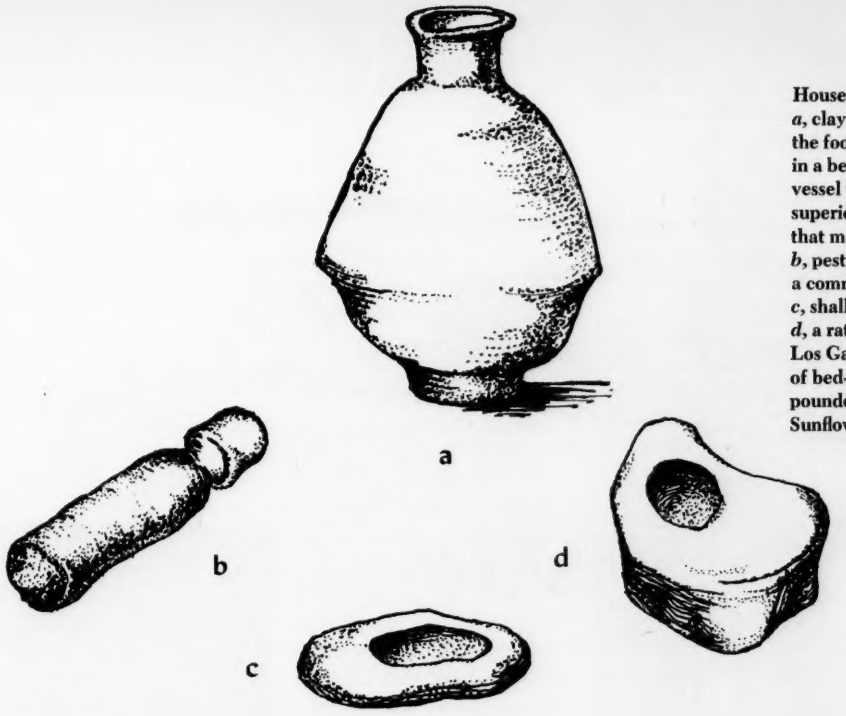
The plains and hill areas also offered varied game. But in the hill country springs were plentiful, and campsites were set up. Stone bowls and other camp requirements which were too cumbersome to carry were left to the next occupant. Over a long period of time enough permanent campsites had been established that seldom after a day's journey would a new camp have to be made.

Equipment of stone took a good deal of time, patience, and energy to fashion. But once made it would last centuries. Arrow-straighteners, bark-scrapers, knives, bowls, hide-scrapers, pestles,



← Pot sherds, Oudjiu, actual size, end views showing thickness of the walls: black on white. Identified as ware from the Southwest.

→ Permanent dwellings, called Doom-Lewis. *a* housed two or more families semi-communally. The ends were left open for ventilation and escape of smoke from the several hearths. Long stringers tied the ribs together at top and sides. Made of



Household utensils:
***a*, clay water jug, Oudjiu; a crude vessel, the foot so uneven it could not stand except in a bed of sand. The commonest Tachi water vessel was of reed. Their basketry was far superior to their pottery, and quite like that made by other California tribes.**
***b*, pestle, fashioned as a fertility symbol, a common form with the Tachi; Los Gatos Canyon.**
***c*, shallow mortar, conglomerate, Warthan Canyon.**
***d*, a rather awkward bowl made from a boulder, Los Gatos Canyon. This canyon has several sites of bed-rock mortars — series of mortar holes pounded into a large boulder, or, as at Sunflower Valley, in large table rocks.**

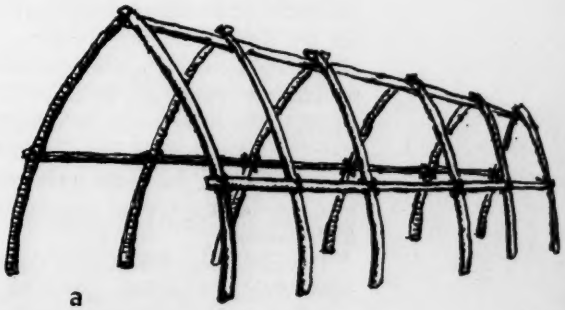
metate stones, digging-implements, axes or hatchets, and many other tools and wares of conglomerate or obsidian were as durable as they were unhandy for a hunter to transport. Camp devices such as these have been found in numerous sites in the hill and canyon areas.

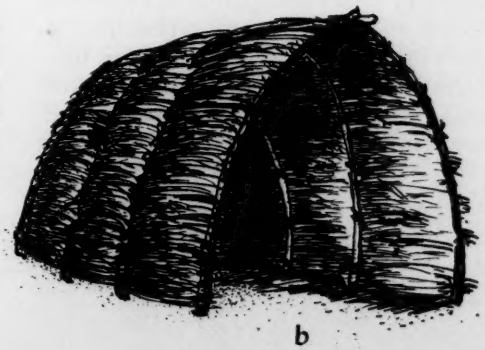
Places designed for more permanent occupation than the open campsite have also been found in the canyon country. In several spots along Los Gatos Canyon juniper posts still stand where huts were built for continuous occupation. Along White Creek, which empties into Los Gatos, there are caves which have evidence of being used for living quarters.

In the 1830's, some Mexicans noticed a series of small huts at the mouth of another of the canyons. Low mounds had been made and four juniper posts were placed around the edges. The posts were thatched with reed and brush for walls and roof. These permanent huts identified the canyon to Mexican travelers, who thus named it Jacalitos ("small Indian huts").

High above the Tachi plains stand four huge boulders. Only three can be seen from the valley floor, so the group has been officially named Tres Piedras. This is one of the few sites of Tachi rock art. Petroglyphs and pictographs have both been worked onto the stone. One of the elements is a long arrow, which, perhaps intentionally, points to the only natural spring in this high country.

Coalinga, like many other valley communities, has its lore about the famed California bandit, Joaquin Murietta. The rocks are locally called "Murietta rocks," for here the bandit and his gang were supposed to have watched for wagons and stages moving along El Camino Viejo. Collections





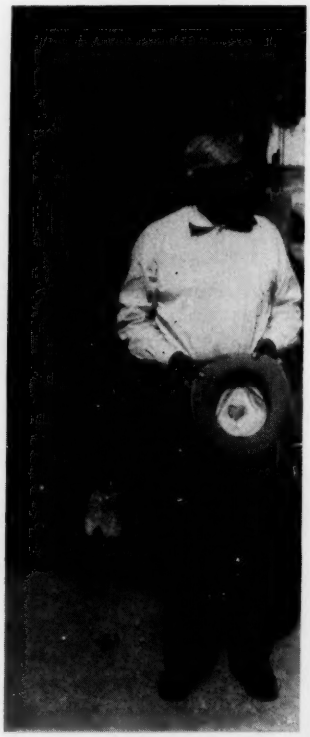
bent poles, the ribs were thatched with reed and brush. Some of these buildings were 60 feet long. *b* is similar but for one family, with the rear wall usually thatched also. Lean-to's were common; one type of house had 4 upright posts over a mound.

Tachi raft on Tulare Lake: bird-shooting, spear-fishing, hauling in a line with several hooks attached. Men usually wore a bird tied around the waist by the wings, leaving their backsides bare; women wore back aprons — something to sit on; children went naked, naturally.

of loot found at the rocks gave rise (or give credence) to the story.

Into the plains area near Cantua, antelope would move from the hills. When spotted by the Indians, a party of all available males would be quickly organized at Oudjiu. The leader would arrange the men about 50 feet apart and into two long lines. One line would encircle the herd from the right while the other approached from the left. After encircling the animals the party would advance until the herd began to fright. Then the swiftest runners would dash forward with spears for the first onslaught. The group in the outer ring would have clubs, bows and arrows, or spears to kill the panicked antelope as they broke through the inner circle of attackers. After the slaughter the animals were carried back to the townsite where the hides were removed by the men, leaving the task of tanning and butchering to the women.

The men spent the bulk of their time hunting food. Women, children, and elders had the task of performing camp chores. The Tachi adapted themselves to their varied environment, and in comparison to many California tribes had an abundant life. Besides deer and antelope there were also bear, puma, wildcat, rabbit, squirrel, and rodents from which bulk meat was obtained. Fish and birds of many sorts were native to the area.



Ho-En-Nick (1870-1956), born on the reservation, raised by his godfather Ah-Leets who was born at Mission San Miguel Arcángel. Ho-En-Nick was one of the last Tachi to know the language, stories, and songs of his people. He allowed the writer and his wife to tape some songs and stories. Since then James Hatch of the University of California (Berkeley) has, with others, tried to compile for the first time the almost extinct Tachi language.

The women had crude but adequate methods for preparing meats. Chunks were usually roasted over an open pit. Fowl, unpicked, was commonly roasted in a mud pack. Crude ovens or stoves were sometimes made in sandstone or volcanic outcroppings, as at Sunflower Valley. Wild oak and brush offered fuel supplies in this and other hill regions, while around Oudjiu, Waiu, and Tulare Lake dried tule and cottonwood provided fuel. Water

Kee-Yow-Zah ("Little White Crane"), last of the Tachi chiefs, was reputed to be 115 years old when he died in 1956. He was born near Visalia and left there as a youth to join the Tachi, before the town was founded;

Ho-En-Nick. Portrait drawing for a lithograph, by Judith von Werlhof.

was heated by dropping hot stones into baskets of reed.

In addition to meat, the women sought out grass seeds, nuts, roots, herbs, bulbous plants, mushrooms, wild lettuce and cabbage, fiddleneck grass, and several varieties of insects. Blackberries grew along the north end of Tulare Lake, which were picked and then spread upon the ground to dry. They were then pulverized and made into cakes. These and acorns were stored for winter use. Salt was obtained from salt-grass which is gathered during the warmest of fall days. Bread flour was made from tule roots and, like dried grasses, was pounded into meal in stone bowls.

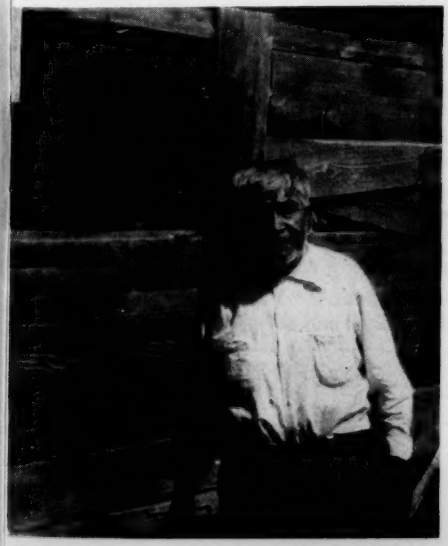
Though the elders were generally responsible for the education of children, the children usually learned by doing. At as early an age as possible the boys were initiated into the tribe as adults. This ordinarily happened during the 14th year of a youth's life. Corresponding to this were the puberty rites for a girl. After such ceremonies the young adults were considered marriageable, and thus the task of repeating tribal life as it had been performed for centuries was begun again.

The ceremonies attending these rites were religious. As with societies the world over whose basis is the hunt, the Tachi were animistic and superstitious. They found in every being, process, or act, a spiritual power. To find the wherewithal for working in this strange world of nature was the province of the shaman. It was his responsibility as mediator between man and the supernatural to preside over festivities, ceremonies, and rituals. And it was his responsibility as interpreter to provide the tribal members with means for meeting each day the powers they would encounter in performing their various duties. The Tachi religion required a great deal of faith in one's ability to communicate with spirits which resided in all objects and actions, for the religion was not overt. There were no altars or monuments to turn toward. Power was a personal matter.

The one power they could not match was that of Western civilization. Ho-En-Nick was raised by Ah-Leets, his godfather, in the traditional manner. But he was raised for a life he would never live.

Ho-En-Nick was shaking his head while he told a story about his grandchildren. They ran to him one Saturday afternoon, and their spokesman asked: "Can we have some money, Grandfather?" "Why you want money?" he wanted to know. "We want to see the show this afternoon, Grandfather." "Why you want see show?" he asked impatiently. "We want to see the cowboys and Indians." "But, you Indian," the old man reminded them. "We want to see *real* Indians, Grandfather."

Ho-En-Nick died with his tribe.



Visalia celebrated its centennial a few years ago. The year before he died the chief burned his face badly — he set fire to his whiskers lighting a cigar.

Island snapdragon *(Galvezia speciosa)* which Thomas Nuttall first named *Gambelia speciosa* for his young friend.

"Like meteors were many of America's frontier naturalists, whose careers were brilliant but all too short". . . One of these brightest and briefest flashes was the life of

WILLIAM GAMBEL

A METEOR is an ephemeral thing. Coming out of the unknown, it incandesces for a brief moment to outshine all else in the sky, then disappears as quickly as it appeared, to be recaptured only in memory. Like meteors were many of America's frontier naturalists, whose careers were brilliant but only too short. Such a young naturalist was William Gambel.

Gambel was born of Irish immigrant parents sometime during the month of June in the bustling Philadelphia of 1823. Unlike many of his young companions at the "renowned corner of Dock & Walnut," Bill Gambel grew up with an aptitude for learning, applying himself as a student to Latin and Greek—and the flute—but finding the greatest enjoyment in the things of the out-of-doors, especially birds and rocks.

Fortunately, Gambel lived in a city where interest in natural history had long flourished. It was to Philadelphia that Thomas Jefferson had sent Meriwether Lewis for his indoctrination in science to prepare for the memorable exploration of the Louisiana Territory. Here it was that John Bartram had built the first botanic garden in America, Alexander Wilson had become the first American ornithologist, and Thomas Nuttall had begun the career which was to make him the "Father of Western Botany." Here in the shadow of Independence Hall stood America's first scientific institution, the American Philosophical Society, and her first museum, Peale's Museum. Not far away was the Academy of Natural Sciences, home port for many an itinerant naturalist.

By what fortuitous circumstances William Gambel, as a lad of fifteen, became acquainted with the famous botanist Thomas Nuttall can only be a point of conjecture. Nuttall, back several years from the Wyeth Oregon Expedition of 1834, was working at the Academy on the tremendous collection of plants he had accumulated. Here William may first have glimpsed him, perhaps asked Nuttall, a little awed, about some rock the boy had found along the Delaware. Or, perchance, the venerable botanist had been a neighbor of the Gambels on Walnut and befriended the budding naturalist as Nuttall himself had been befriended by botanist John Windsor, years before, in Settle, England.

However their friendship may have sprung up,

This space was intended for a portrait of William Gambel,
but Professor Beidleman's exhaustive search has failed to turn one up.

FRONTIER NATURALIST

RICHARD G. BEIDLEMAN

Gambel was invited by Thomas Nuttall to accompany him on a collecting trip to the southeastern United States during the winter of 1838-39. For almost a year the two men, one in his fifties and famous the world over, the other an unknown youth in his teens, tramped through the woodlands of Georgia and the Carolinas. Gambel took note of the many flowers, shrubs, and trees which the excited botanist pointed out to him but experienced greater thrill in the sight of the bird life. Upon his return from this trip, Gambel found himself the envy of the neighborhood, welcomed home by all but more reluctantly by Bill King, who had found Gambel's sweetheart, Kate Towson, quite appealing with her young swain out of town.

Early in 1840 Nuttall and Gambel were off on another journey, this time into New England where the elder botanist was gathering material for his revision of Michaux's famous *Sylva* and, at Boston, giving a series of lectures for the Lowell Institute. During the spring the two stayed in Cambridge, where Nuttall for years had been curator at the Harvard botanic garden and lecturer in botany and zoölogy.

The name of Nuttall had as much appeal to Bostonians in 1840 as it had had in 1822 when, after a raging controversy in the local newspapers, Nuttall had been selected to the Harvard post. For the Lowell Institute lectures on botany, which began the middle of March, there were 12,000 applicants, and only one out of four was lucky enough to be awarded tickets. Even then, the crowds to hear Nuttall were so large that his British-accented voice, used to the confines of a museum alcove or a silent bit of wilderness, carried to few. No one in the throngs noticed Gambel. . . . But small matter, William had heard the words of the great botanist at first hand.

Twice during late spring, after Nuttall's tremendously successful botany lecture series, the two traveled into Maine. The first trip, by steamboat, was a rough one, and Gambel was elated that he was among the few who eluded seasickness. In Maine the pair visited boat yards and other timber-utilizing establishments and delighted in the choice mineral collecting around Paris. Instead of shipping back home, they traveled westward overland through the Berkshires to Albany and then down the Hudson River, finally returning to Philadelphia in mid-summer.

Imbued by Nuttall with a yearning for scientific adventure, William Gambel in the spring of 1841 headed toward the American wilderness, reaching Independence, Missouri, along the same route that the botanist and another young protégé, John Kirk Townsend, had followed in 1834.

Gambel was bound for Santa Fe and then California, a youthful naturalist of eighteen accompanying a caravan of some eighty hard-bitten trappers and traders who divided their time between cursing the hot, dusty grassland and the slow-plodding, bony mules. The initial perils of this southwestern frontier must have seemed more frightening to Gambel's mother and two sisters back in Philadelphia than they did to the youth, who wrote home gaily, "I hope you will . . . not be anxious about me for you know I am a carefree fellow and sooner run than fight."

When William wrote home from Santa Fe near the end of July, 1841, it was quite another story. The company with its forty merchandise-loaded wagons had left Independence during the second week of May. In western Kansas the party had been surrounded by 500 Arapaho Indian warriors, escaping battle only through a profuse distribution of gifts. It must have been an eerie encampment here with these Indians and, scattered nearby, the remains of the 76 Pawnees the Arapahoes had massacred earlier. Close to the New Mexico Rockies a band of about 400 Utes, not so easily dissuaded from attack, rained shots upon the expedition for an entire morning. When the Indians weren't bothersome along the route, the unquenchable thirst was.

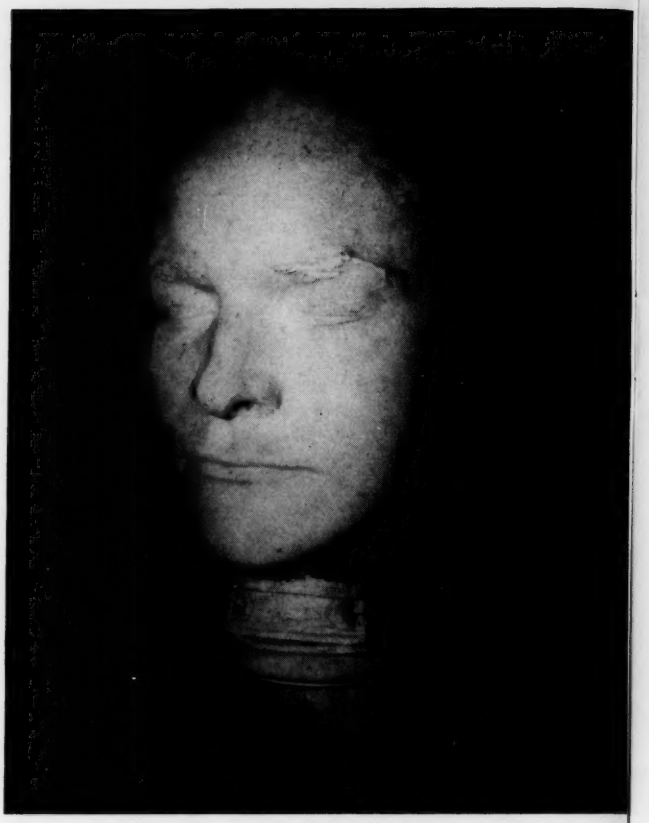
The caravan reached the sun-baked adobes of Santa Fe on July 2, 1841, in one of the fastest southwestern muleback treks on record. During the weeks which ensued, Gambel wandered up and down the Rio Grande valley and into the mountains near Santa Fe, gathering unfamiliar plants, birds, and reptiles, the first such specimens from this raw region of America. The naturalist's early facility with Latin helped him during these months in the Southwest when little but Spanish was spoken to him.

Late summer is a mellow time in New Mexico. Gambel, however, felt he could tarry no longer on his way to California. The year's last flowers were blooming by the end of August in 1841. The road runners would skitter from bush to bush for only a few more weeks, and soon winter would send the juncos to join

the house finches in the corrals near the Governor's palace. Also, there was military foreboding in the air, with rumors of a company of Texas soldiers proceeding toward Santa Fe in a not friendly mood.

Thus, when William Workman and John Rowland left with their company of 25 adventurers from the village of Abiquiu on the Chama River for California on September 1, Gambel was with the party. A long journey now lay ahead. There would be no ease of the eastern railroads but, instead, "jog, jog on a mule from morning to night." The party swung up toward Great Salt Lake on the Old Spanish Trail, then cut diagonally southwestward across present Utah and northern Arizona into California.

Near the end of November Gambel reached "Pueblo de los Angeles" after an arduous trip across barren mountains and raw deserts "worse than those of Arabia," sometimes wanting for water days at a time and by the end of the journey, when the traveling stock of sheep had been exhausted, verging on starvation. It must have been a tremendous satisfaction to be, finally, on the shores of the great blue ocean of which Nuttall had told him and shortly to see for himself the yellow-billed Nuttall's magpie at Santa Barbara, the gray titmice scampering through the pines and cypress of Monterey, and the croaking ravens crowded about the Spanish courtyards in Los Angeles.



Gambel oak, Arizona. (Photo by the author)

Although Gambel was anticipating a quick return to Philadelphia by way of the Hawaiian Islands and around Cape Horn, the party with which he was traveling in California became harassed by Indians, and an unexpected change in plans developed. The United States fleet, then on the West Coast, came to the rescue of Gambel and his companions, and the naturalist soon found himself the personal secretary of the commodore of the fleet, Thomas Ap Catesby Jones, about a month after Jones had stunned the world diplomatic circles in 1842 by capturing Monterey on the premature assumption that a war with Mexico had begun.

Because of his error in judgment, Jones was shortly

Gambel white-crowned sparrows. (Denver Museum of Natural History photograph by Walker van Riper)

Thomas Nuttall, Gambel's mentor in science.
Life mask, courtesy Gray Herbarium, Harvard.

placed on forced retirement. Gambel's services for him had been sufficient, however, for the commodore to write a helpful letter of recommendation for the young scientist, who subsequently served aboard the U.S.S. *United States* as secretary for Commodore Dallas and later Captain Armstrong.

Until the summer of 1845, Gambel remained with the navy. He traveled up and down the California coast, becoming the first scientist to set foot on Catalina Island and to collect specimens there. In addition, he visited every port of western North and South America, the Hawaiian and other Pacific islands, accumulating what he could for his friends. The most bizarre accessions were the mummified Indian heads from Peru.

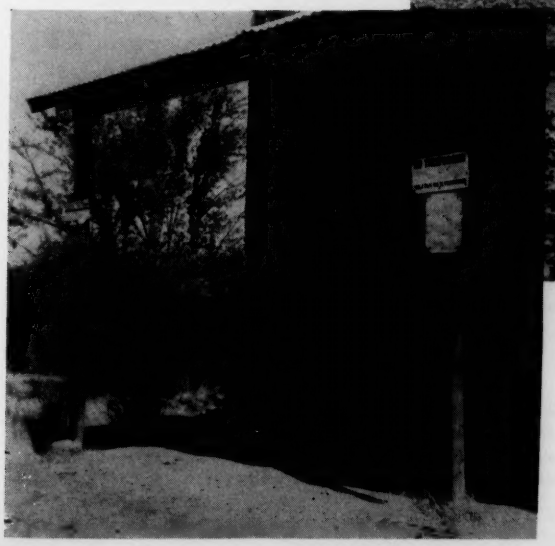
Shortly after Gambel's arrival in California late in 1841, his close friend and benefactor Thomas Nuttall had departed from America for an uncle's estate in England, to which the aging botanist was bound by the terms of a family will. During William's years in the West and with the navy, a close correspondence had been maintained between these two naturalists. Nuttall had tried to obtain a free passage home for Gambel in the Boston brig *Alert,* aboard which in 1836 Nuttall and a then unknown Harvard student-sailor, named Richard Henry Dana, had returned from California.

Nuttall placed at the disposal of agents in Boston and Philadelphia money for Gambel to draw upon at his return. Constantly he urged Gambel to visit him in England where he, Nuttall, would see to it that the younger man could find audience for his observations and market for his collections. But Gambel seems never to have made the trip across the Atlantic.

In August of 1845 Gambel finally returned to Philadelphia on the navy ship *Cyane,* no longer a youthful rock collector tagging at the heels of some more famous naturalist but now a scientist and traveler of some note himself and only a little over twenty. To the Academy of Natural Sciences, of which he had been made a member in 1843, he brought several new species of birds and many specimens of birds unfamiliar to Easterners, reporting on them before the membership on several occasions, the papers later being published in the Academy's *Proceedings.* During this period, also, Gambel was called upon to serve as recording secretary for the Academy.

The autumn of 1847 was a time of reunion for Gambel and Nuttall, the latter returning from England for a brief six months, primarily to work upon William's extensive collections of western plants. It is easy to imagine the enthusiastic interchange of obser-

➔ Where William Gambel died? Rose's Bar, Yuba County, California, once teemed with Forty-Niners whose dredges churned up the gold-laden gravel of the Yuba River bed.



All that remains of Timbuctoo, once thriving Gold Rush town near Rose's Bar, is the old store and Wells Fargo station. (Photos by Don Greame Kelley, 1958)

vations between these two naturalists of different ages but of similar frontier experience. There exists the strong possibility that the pair may have revisited their southeastern haunts of 1838-39 during a portion of this winter.

Since late 1845 Gambel had been formally studying medicine as an eventual means of supporting himself. Interest in the medical profession probably dated from the navy days when Gambel had whiled away the monotonous maritime hours by reading medicine with the ship's surgeon. In 1848 he received his medical degree from the University of Pennsylvania. In October of the same year, finding that his boyhood friend Bill King had not successfully wooed Catherine Towson, William married Kate in St. Luke's Church in Philadelphia.

Openings for doctors in Philadelphia at this time were few, and unfortunately Gambel was still obsessed with the wanderlust that dated back to his earliest excursions with Nuttall. These two factors combined to send Gambel westward again, in April of 1849, with an expedition headed by Isaac J. Wistar, leaving behind his bride of six months. He anticipated establishing himself as a doctor for several years in the boom town of San Francisco, and to this end he sent on his books and medical equipment by ship.

During the course of his second overland expedition, Gambel traveled with various companies, across to St. Louis and Independence, up the Platte River, and eventually to California again. This journey, like the earlier one, was replete with vicissitudes, the worst of which were sickness and snow. Modes of transportation, however, were somewhat improved, for between Philadelphia and Independence Gambel traveled consecutively by rail, stagecoach, and wagon.

With Wistar's party the young naturalist served as a doctor and was kept busy ministering to victims of smallpox, pneumonia, and cholera. By June 2, at Grand Island, Nebraska, Gambel had tired of his arduous routine and joined a larger company which did not appear to be so sorely harassed by misfortune at the moment. Wistar was sorry to see the scientist leave, characterizing him as an amiable fellow, "very pleasant in conversation," but somewhat averse to the hard work of camp duty.

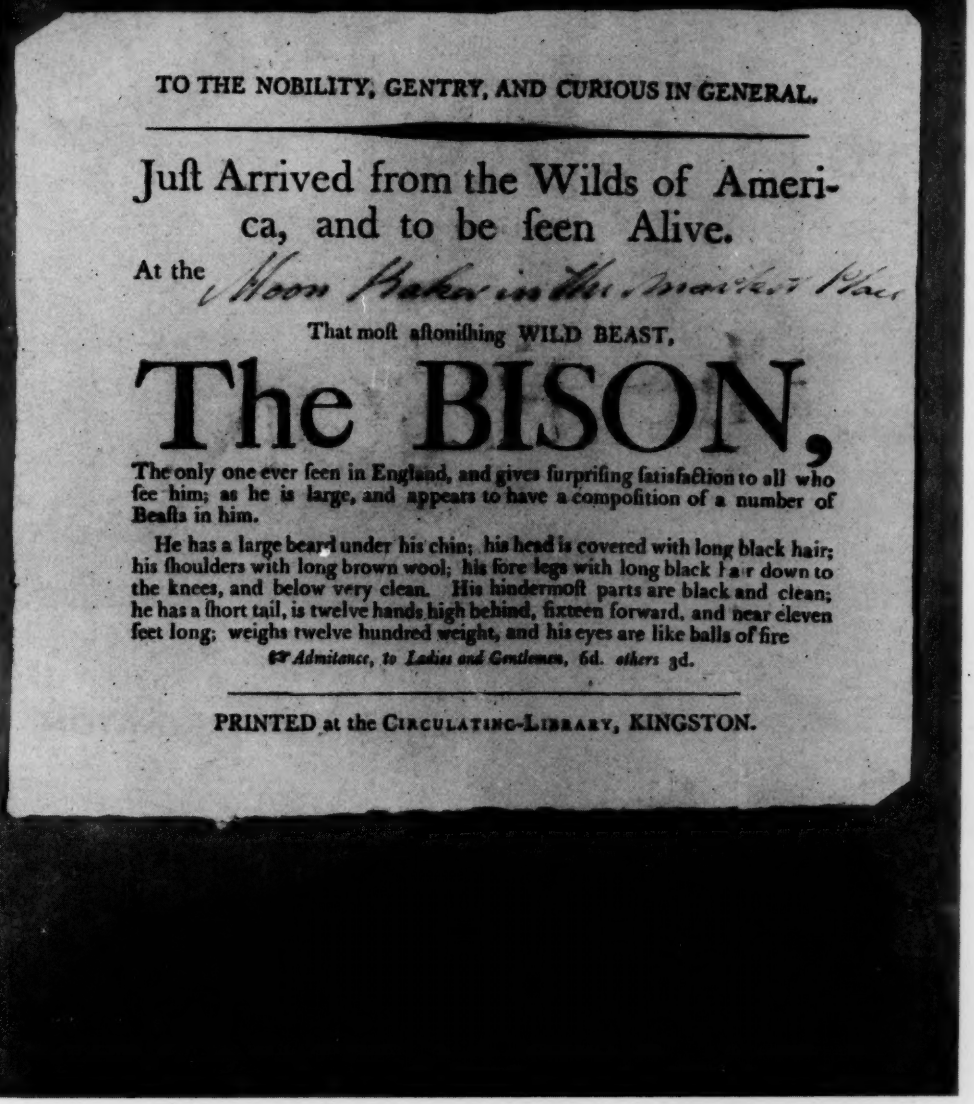
Captain Boone's ox train, which Gambel joined, was soon to have manifold troubles of its own. Many teams and wagons were lost during the crossing of the great Humboldt River desert of present-day Nevada. Winter snows were already softening the silhouette of the Sierra Nevada as the travelers, with all of their cattle dead and their supplies consumed, were finally forced to turn to homemade snowshoes and friendly Indian guides to lead them into the promised land of gold.

Most of the men perished en route, but Boone, Gambel, and a few others reached the crest of the mountains and dropped down toward the rain-drenched central valley of California along the *Río de las Plumas,* the beautiful, rock-walled Feather River. Here and there among the placer miners who swarmed the ravines Gambel noted unmistakable symptoms of typhoid fever. Exhausted as he was, and anxious to reach San Francisco, the doctor did what he could for the miners. Then at Rose's Bar on the Yuba, on December 13, 1849, he himself fell victim to the epidemic.

On a sunny slope under the red-boled pines William Gambel was laid to rest. A few weeks later the vessel on which he had shipped his belongings struck the rocks at the entrance to the Golden Gate and sank; and before a marker could be erected at his grave, placer miners had torn the hillside away, scattering the last remains of the young Pennsylvania scientist.

What breadth of contribution does a scientist achieve before the age of thirty? No modern western naturalist can hear the cheerful chatter of the mountain chickadees in the piñons of New Mexico, see a snow-capped southwestern peak rising out of its lowest mantle of Gambel's oak, spot the diminutive black and white Nuttall's woodpecker—named by Gambel—whacking away at a pine branch shading an old prospect hole in the Sierra, or hear the winter twitter of the Gambel's sparrows in an Arkansas River bottom without agreeing with D. B. Wood's obituary comment on Gambel, written at Mountain House, Alta California, three months after Gambel's death: "He has departed early, but not unhonored . . . "

One of Gambel's namesakes, *Astragalus gambelianus.* This and the drawing on page 10 were made by Jeanne Janish for Abrams' *Illustrated Flora of the Pacific States,* and are reproduced by courtesy of Stanford University Press.



TO THE NOBILITY, GENTRY, AND CURIOUS IN GENERAL.

Juſt Arrived from the Wilds of America, and to be ſeen Alive.

At the Noon Baker in the Market Place

That moſt aſtoniſhing WILD BEAST,

The BISON,

The only one ever ſeen in England, and gives ſurpriſing ſatisfaction to all who ſee him; as he is large, and appears to have a compoſition of a number of Beaſts in him.

He has a large beard under his chin; his head is covered with long black hair; his ſhoulders with long brown wool; his fore legs with long black hair down to the knees, and below very clean. His hindermoſt parts are black and clean; he has a ſhort tail, is twelve hands high behind, ſixteen forward, and near eleven feet long; weighs twelve hundred weight, and his eyes are like balls of fire

☞ *Admittance, to Ladies and Gentlemen,* 6d. *others* 3d.

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(Photograph courtesy of the Sutro Library, San Francisco)

"BALLS OF FIRE"

RICHARD DILLON

BUFFALO BILL CODY amused the English, up to and including Victoria Regina herself, in the year 1887, when his Wild West Show paraded before enthusiastic audiences. But this was not the first glimpse of the American bison by Britishers for, almost a century earlier, an American "buffalo" had taken London by storm. In 1791 George Stubbs sketched a bison which was on exhibit as "the bonassus" and, two years later, the animal was being exhibited by a showman at a bakery stall in the public market of Kingston, a market town a few miles southwest of London. Prominent among those who heeded the handbills distributed all over the City and its suburbs was Sir Joseph Banks, President of the Royal Society. A man of catholic interests, Banks was keenly curious about all scientific phenomena. Proof that Banks was impressed by the brute with the eyes like "balls of fire" is the fact that not only did he carefully preserve the handbill on the bison but that he clipped a lock of hair from the beast. This bit of bison wool and the broadside can be seen today in the Sir Joseph Banks Collection of the Sutro Library in San Francisco. The *Penny Cyclopedia* called the animal "one of the wonders of the day." It became so famous that it was incorporated into the epilogue of the Westminster Play and was purchased by the Zoological Society of London. Shortly thereafter, however, the old bull died, "probably in consequence of the sudden change operating upon a habit already enfeebled by chronic disease." The Hudson's Bay Company supplied the Society with a replacement, a young female calf, which lived out its days in Regent Park Garden.

Head-Hunters' House Guest

▼ Chinese launch which took the author upriver in Sarawak.

CLIFFORD V. HARRINGTON

PHOTOS BY THE AUTHOR

THE SHIMMERING equatoral sun turned the muddy Baleh River into a seething cauldron as we putted along in the motor powered prau. We were on our way to Rumah Jilan, the long-house home of more than one hundred Iban tribesmen in the interior of the British Crown Colony of Sarawak, Borneo.

These people were head-hunters until the end of World War II and in earlier years gained world-wide notoriety as the "Wild Men of Borneo."

This tradition of Iban fierceness goes back to the earlier periods of their known history, when they joined the Malay pirates and ventured out into the South China Sea to overtake the plodding merchantmen. While the swift Malay corsairs plundered valuable cargoes, fierce Ibans collected the heads of their victims.

In the 1850's and 1860's Ibans began moving up the rivers of Sarawak, killing the people who stood in their way. Their reason—search for new lands on which to grow rice. The local tribes put up stiff resistance, but the Ibans eventually triumphed. Today more than 190,000 of them live throughout Sarawak.

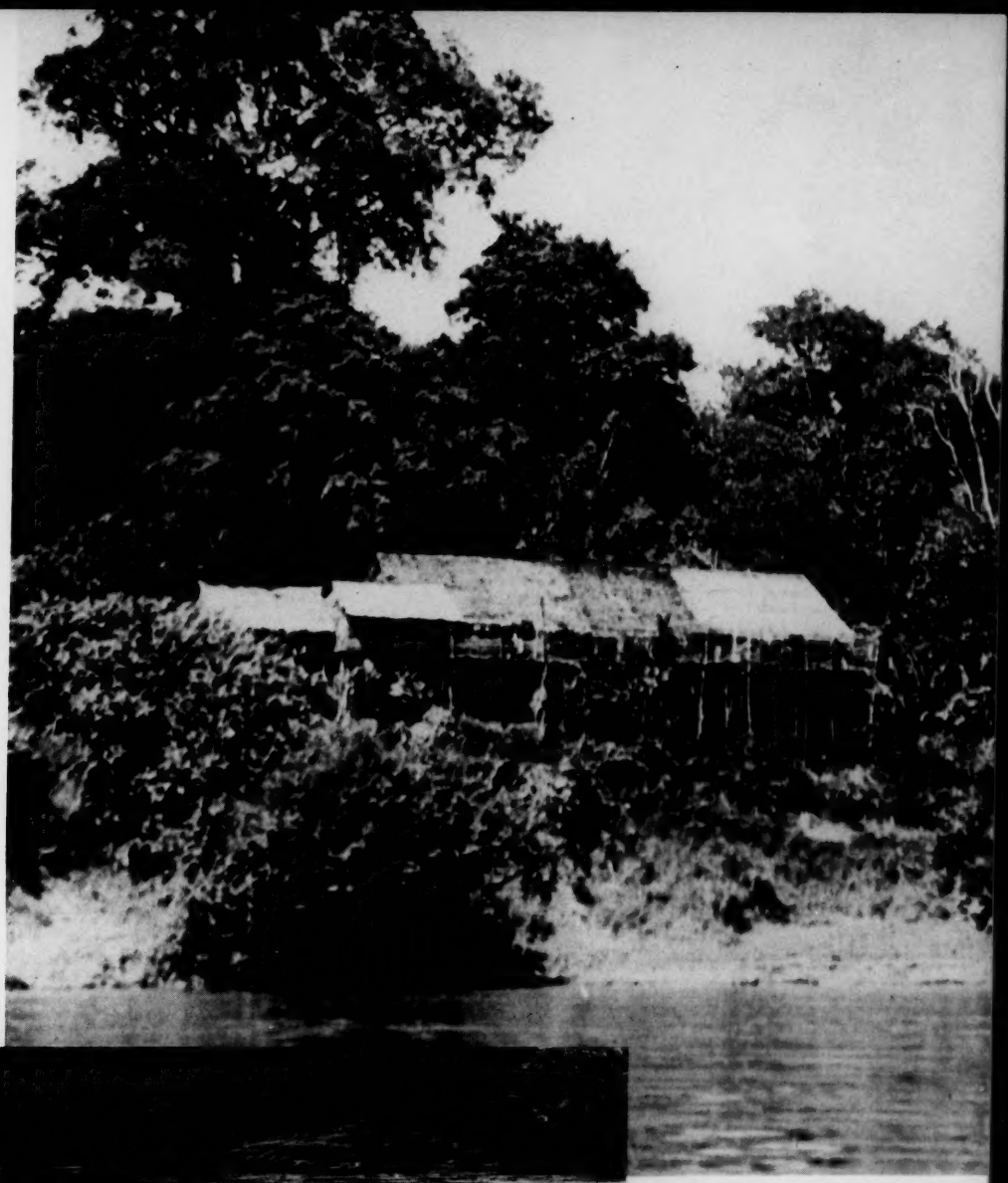
I had traveled for three days by tramp steamer from Singapore to the coast of Borneo and for two days up river by Chinese launch to live with and photograph the Ibans. After registering my name and the purpose of my visit with the local District Officer at Kapit, I had hired a prau and boatman to take me on to Nanga Mujong, an agricultural mission station run by Tom and Jennie Harris, American missionaries of the Methodist faith.

From the mission my boatman now was taking Harris and me to the Iban long-house farther up stream. We landed at a spot where several praus were tied and climbed a notched log to the high bank. We walked along a narrow jungle path to the building which was perched on stilts nearly eight feet high. There was the long-house—more than one hundred feet of it.

As Harris and I climbed to the open veranda

← A jungle river in Sarawak, Borneo, home of more than 190,000 Iban tribesmen.

→ A long-house on the Baleh River.



The prau landing on the Baleh River at Rumah Jilan.

which ran the length of the structure, the short, copper-colored tribesmen came to greet us. I had seen Ibans at a distance on my way up river, but never close at hand until now.

Several of the men had long hair. Their ears were pierced and their bodies were spotted with large, intricate tattoos. A majority wore G-strings, but a few sported khaki shorts. The women either wore full length sarongs or waist-high skirts. They also were tattooed. The front teeth of both the men and the women were filed down to the gums and in their place were partial gold plates purchased from the local Chinese merchants.

We were invited into the covered hall which paralleled the veranda. A woman brought bowls of parched rice and we sat cross-legged on mats as we ate. Harris made arrangements for me to stay at the long-house.

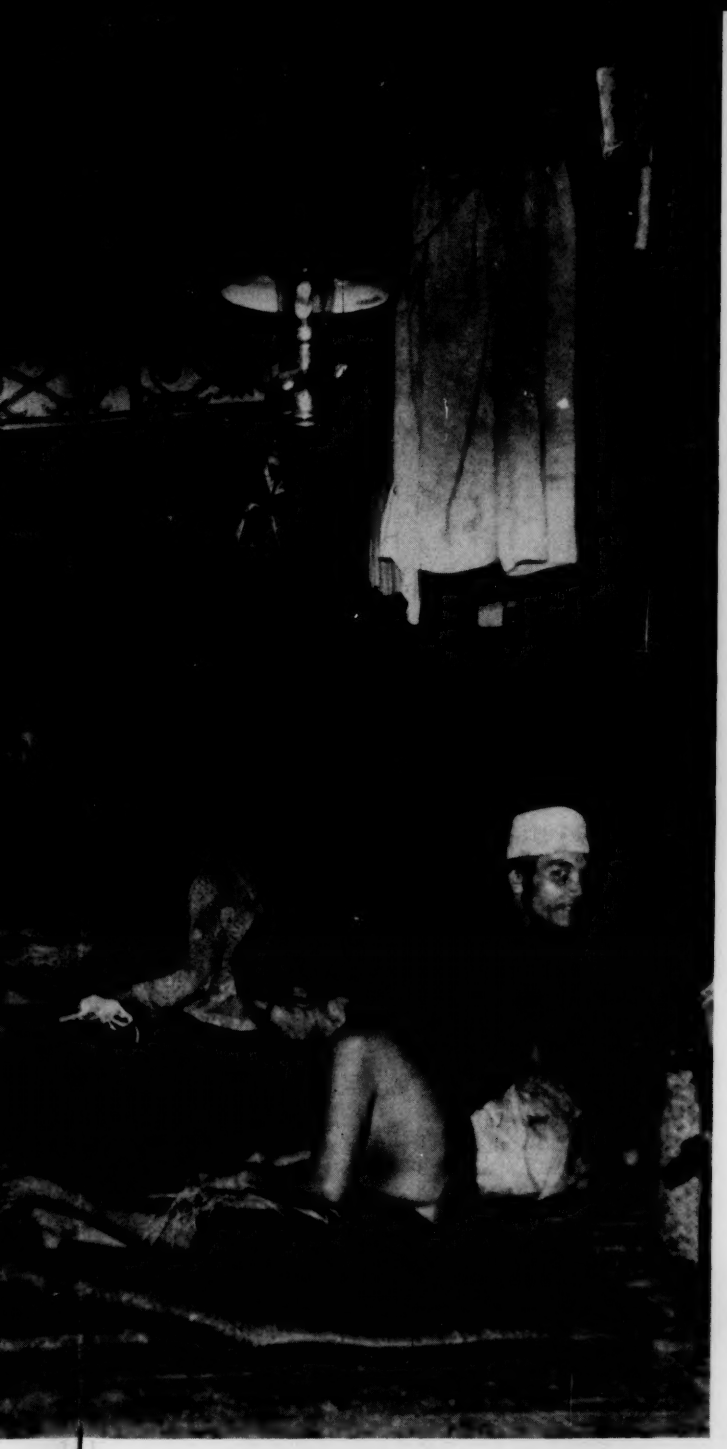
After a brief visit, we hurried back to the mission station, so that I might gather food and more equipment and return to Rumah Jilan before nightfall. Harris, who had to attend to his other duties, offered to send a mission boy, Paul, with me as interpreter.

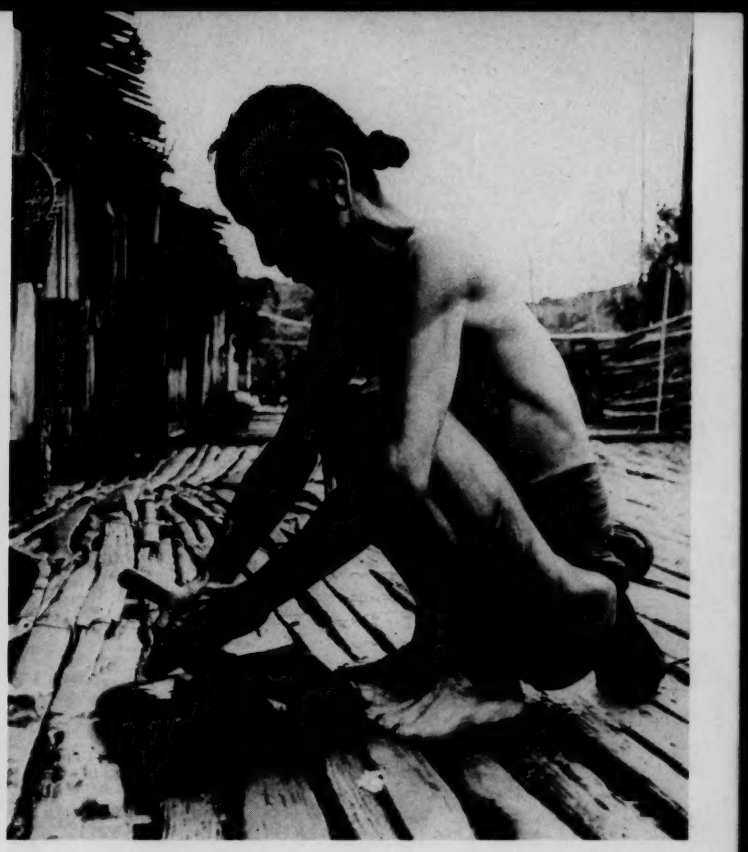
The sun was setting as I approached the long-house again. Lamps had been lit and the people from the other families gathered in a semi-circle to talk with me in front of the door of the family with which I was to stay. The building was filled

(LEFT) One end of the open veranda at Rumah Jil

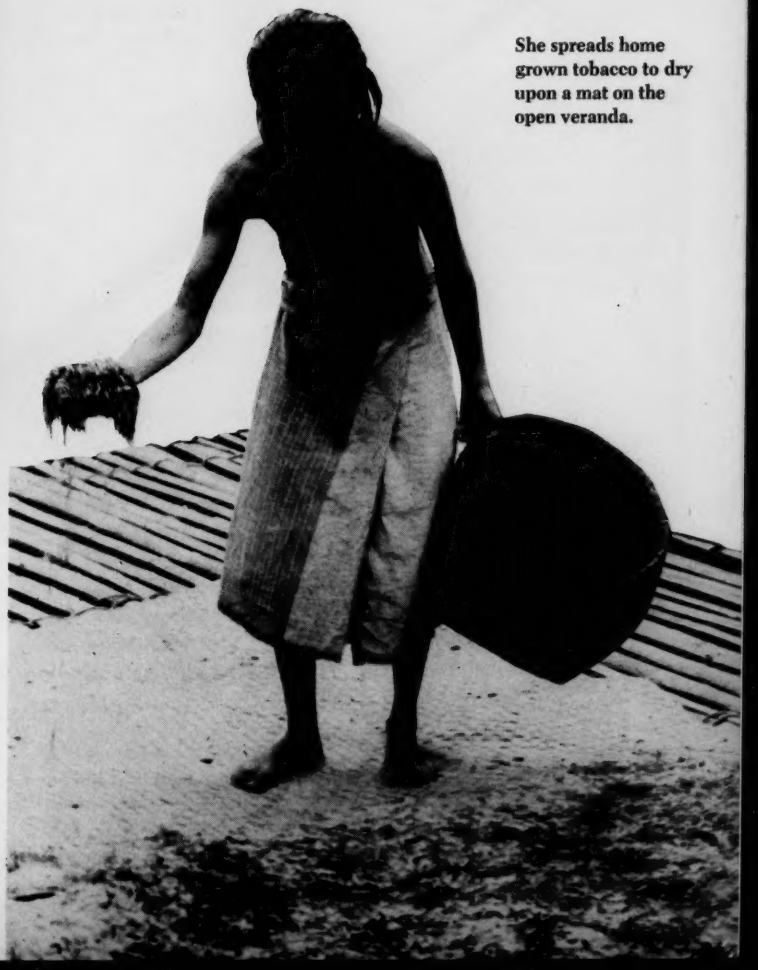
(CENTER) The long hall, Rumah Jilan; separate family

(RIGHT) An Iban sharpens a modern h





She spreads home grown tobacco to dry upon a mat on the open veranda.



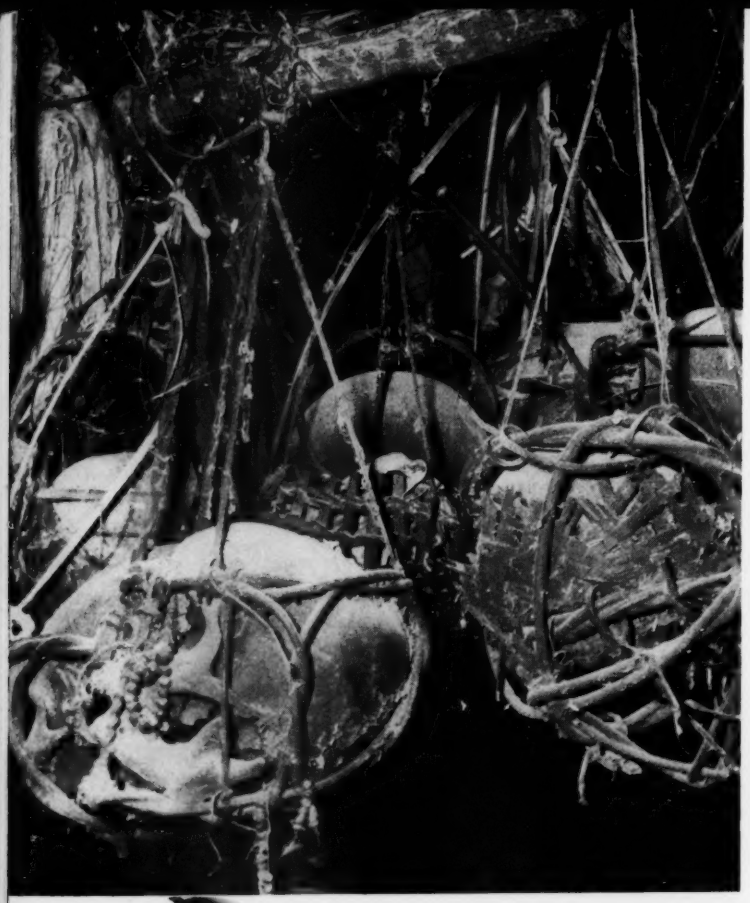
with the garlic-like odor of durian, a fruit that the Ibans and other local people are especially fond of. Why, is a mystery to the westerner.

As we talked, I looked about anxiously for the human heads of which I had heard so much. I had

randa at Rumah Jilan; the ground is eight feet below.

n; separate family apartments open off the hall to the right.

arpens a modern hatchet on wetted stone.



A skull collection at Rumah Jilan.

expected to find shriveled knobs of dried skin and hair, but I was not prepared for what hung in the shadows above my head.

Earlier as I had moved about the room, I had found it necessary to duck under several bundles tied to the rafters. At the time I had not given them much thought. Now, I arose and examined them more closely. Grinning back at me in the flickering lamp light were seven soot-blackened skulls. Instead of shrinking the heads of their victims, the Ibans had thrown their grisly trophies into a fire and left them until the flesh and hair were burned off. Then they had hung them out for their neighbors to see.

My hosts were amused when they saw me looking at their skull collections. They consider them to be heirlooms and do not take them too seriously nowadays. Some of the heads, however, date back only a few years to the time during the war when the British informed the tribesmen that for the duration they could return to head-hunting among the Japanese invaders. Even today nearer the Indonesian border, heads will be taken occasionally, a missionary later informed me. But the instances are rare.

Bed time in the long-house was approximately 8:30 P.M. I went into the apartment that belonged to my host. The private quarters of the different families were built side by side and opened off the main hall. Under this one roof more than one hundred persons were preparing for bed.

Ibans unrolled mats on the floor and promptly were snoring loudly. A lamp was kept burning in the room throughout the night, according to custom. But it did not comfort me, as I lay awake on my sleeping bag. I tried to forget the cluster of skulls which hung outside the door. A tropical downpour drummed on the thatched roof, making sleep more difficult for me.

Early in the morning I was awakened by a mournful howl which sounded as if it were coming from the river. I looked around, but no one appeared to be awake, let alone concerned with the sound. I envisioned a raiding party from somewhere up river. Paul stirred and mumbled that the noise was made by the Iban dogs which I had seen earlier in the day. During my stay, I never heard one bark.

At approximately 5:30 A.M. the family began to arise and prepare breakfast. Rice was the mainstay of the meal. Beneath the house pigs and chickens fought for scraps of food which dropped between the slats in the floor.

The Iban blowgun is now being replaced by modern shotguns.

Sarawak ranger at Rumah Jilan.

from Sumatra approximately 350 years ago, early realized the importance of crop rotation. According to custom, they select their farm sites at different locations and divide them into plots which are allowed to lie fallow in successive years. As whole areas are exhausted, the families move to their next farm. Some tribesmen move from farm to farm in such a wide circle from their homes that it may be several years before they return to their long-houses for a lengthy stay.

Iban life revolves around the planting, growing, and harvesting of rice, I discovered. The Iban consult their gods to determine the most auspicious day to begin the cutting of the tropical rain forest.

In the main hall one family was preparing to set out for one of its rice fields which was several hours prau ride away. The Iban method of rice cultivation is so devastating to the soil that families often have to travel great distances to find fertile land. They grow their crops in hillside fields, rather than in the paddies seen throughout the Orient. Because the jungle is almost impenetrable, the tribesmen are forced to seek areas along the rivers.

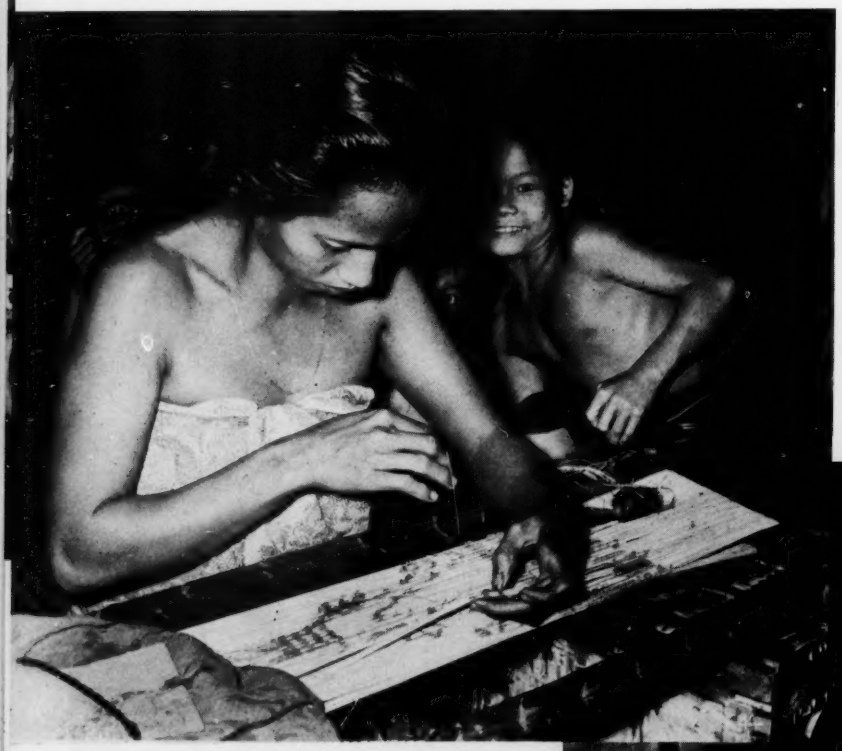
The Iban, who were supposed to have migrated

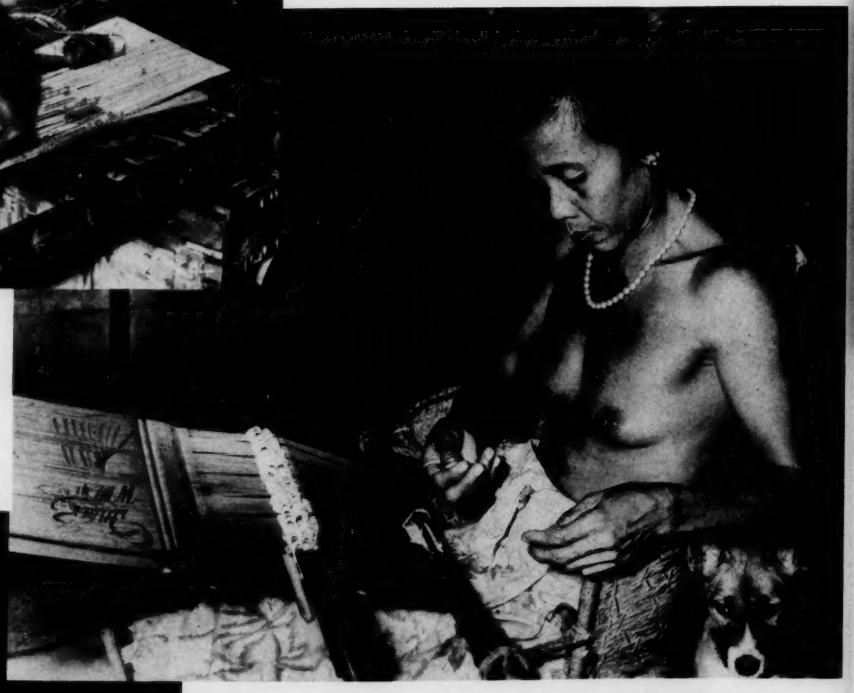
↑ Author, blowgun, Iban.

← Iban trio with pierced ears and tattoos, the design under the chin signifying a lengthy trip from the long-house. In former years the man had to collect at least one head before returning.

They burn the area when the vegetation has dried sufficiently. Again they commune with the gods to ascertain the day to begin planting. When the time has been determined, they scratch holes in the earth, drop several grains of rice in each of them, and leave the exposed seeds to sprout. Then the tribesmen build small houses and settle down to protect their growing rice from jungle animals and birds. If there is a bountiful harvest, the family often will cook more than it needs and soon the supply is exhausted. In his studies Harris has found that Ibans do not plan the rationing of their food too far into the future. If the rice runs out, as it often does, they turn to sago root for their basic food. Their diet is supplemented by wild game, fish, and jungle vegetation, such as ferns.

The rafters of Rumah Jilan are dotted with antlers of deer which the men have shot in the jungle. They use modern shotguns, instead of the traditional blowguns. The British officials who interfere little in most Iban affairs allow only the headman





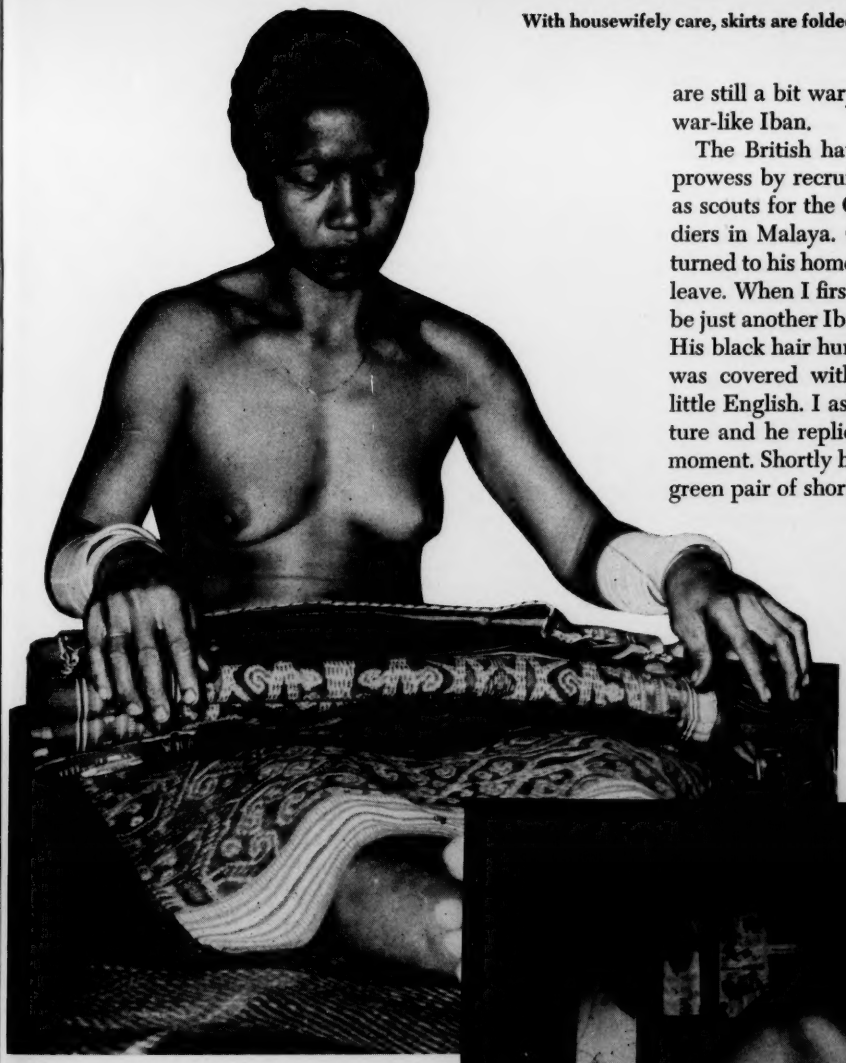
▲ Threads are wrapped in preparation for dyeing and later weaving.

→ Designs are sometimes woven in the conventional way on a waist-loom.

of each family to purchase modern weapons and a restricted number of shells for hunting. As the rounds are fired, the casings are returned and the hunter is allowed to buy more shells. The officials

She braces her feet to tighten the loom band around her back and make the threads taught for weaving.

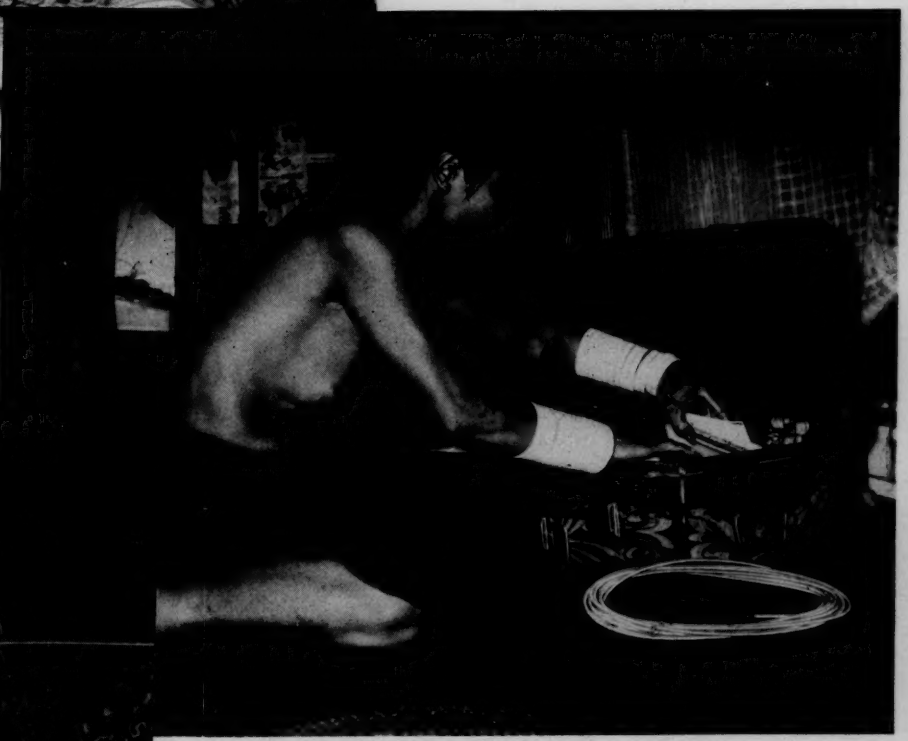
With housewifely care, skirts are folded —



are still a bit wary of trouble from the previously war-like Iban.

The British have acknowledged Iban hunting prowess by recruiting the best of the young men as scouts for the Communist-hunting English soldiers in Malaya. One of these jungle fighters returned to his home at Rumah Jilan for a thirty-day leave. When I first saw the fellow, he appeared to be just another Iban, but of magnificent physique. His black hair hung to his shoulders and his body was covered with circular tattoos. He spoke a little English. I asked him if I might take his picture and he replied that I would have to wait a moment. Shortly he returned dressed in a starched green pair of shorts and a shirt. His long hair was tucked under a jaunty black beret. This outfit was the uniform of the Sarawak Rangers. The Sarawak ranger is almost superhuman at tracking. He can tell the size, composition and direction of movement of guerrilla bands from almost imperceptible clues. But the

— and stored away in a brightly decorated chest.



↑ The Ibans like to cut pin-up pages from old European and American magazines.

← The pattern of this blanket is dyed into the threads. Grandma's glasses are bought from a Chinese merchant, cheap.

Iban scout has one distressing quirk. After he has spotted the quarry he often has to be restrained physically from going berserk and lopping off Communist heads.

Thoughts of the reputed ruthlessness which the Ibans are capable of displaying conflicted with the impression of mildness these people made on me. They laughed frequently and appeared to have even dispositions. The men, when they were not working, were content to putter about the house. They rolled cigarettes from local leaves and home-grown tobacco. Those who were chewing betel nut spat gobs of bright red saliva between the floor slats. The women busied themselves with household chores. The most interesting of their activities was the weaving of intricately patterned blankets. Rather than weave the design into their material, the Iban women dye it in. They wrap the warp threads with still finer strands in the desired pattern. After the warp is dipped into red dye and dried, a portion of the fine threads is removed. After a soaking in indigo dye and a second drying, the remainder of the threads is unwound. The woof is woven into the warp, completing the material.

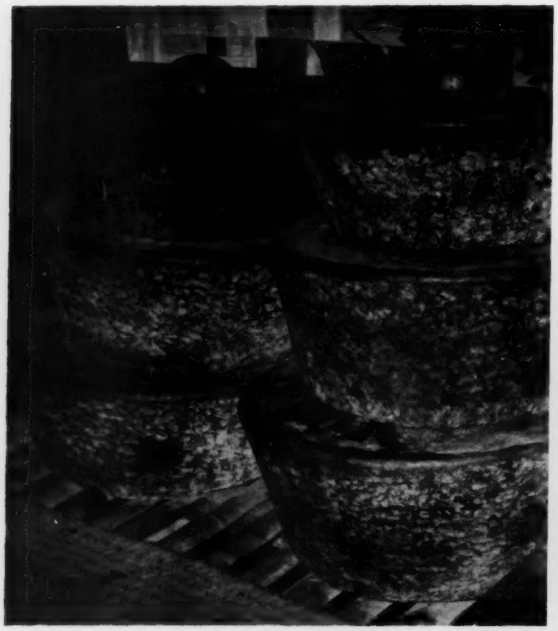
The Ibans traditionally have measured their wealth by the number of Chinese gongs and earthenware vases they are able to accumulate. Today in addition to these treasures, numbers of tribesmen manage to earn enough Straits dollars by tapping the local rubber trees or working a sawmill near the coast to purchase expensive outboard motors for their dugout canoes. Motors and shotguns are beginning to replace gongs and vases as visible signs of affluence.

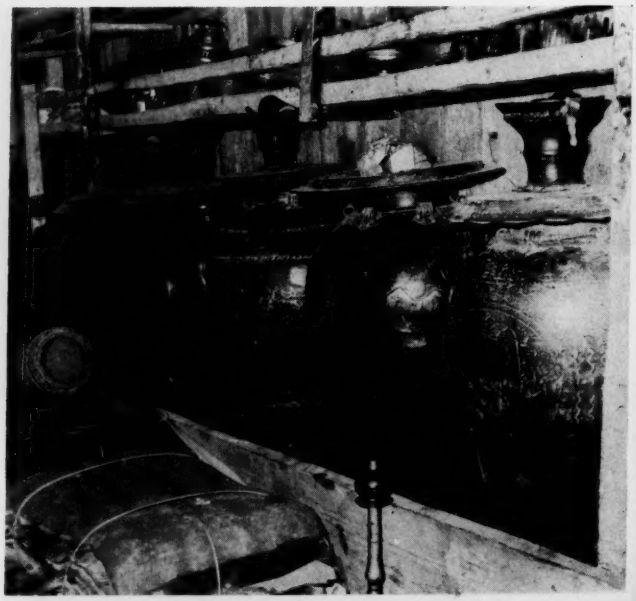
In spite of their uncomplimentary reputations, I found Ibans courteous and congenial. Reluctantly, I had to leave Rumah Jilan to make a connection with a steamer bound for Singapore. Nearly twenty tribesmen gathered at the river to bid me goodbye. It was difficult to believe that these strong, but seemingly mild people were the same persons who collected the skulls that hang from the ceiling of Rumah Jilan.

Borneo People. By the Right Honourable Malcolm MacDonald. Alfred A. Knopf, New York. 1958. 424 pp., 44 photos, end-paper maps. $6.50.

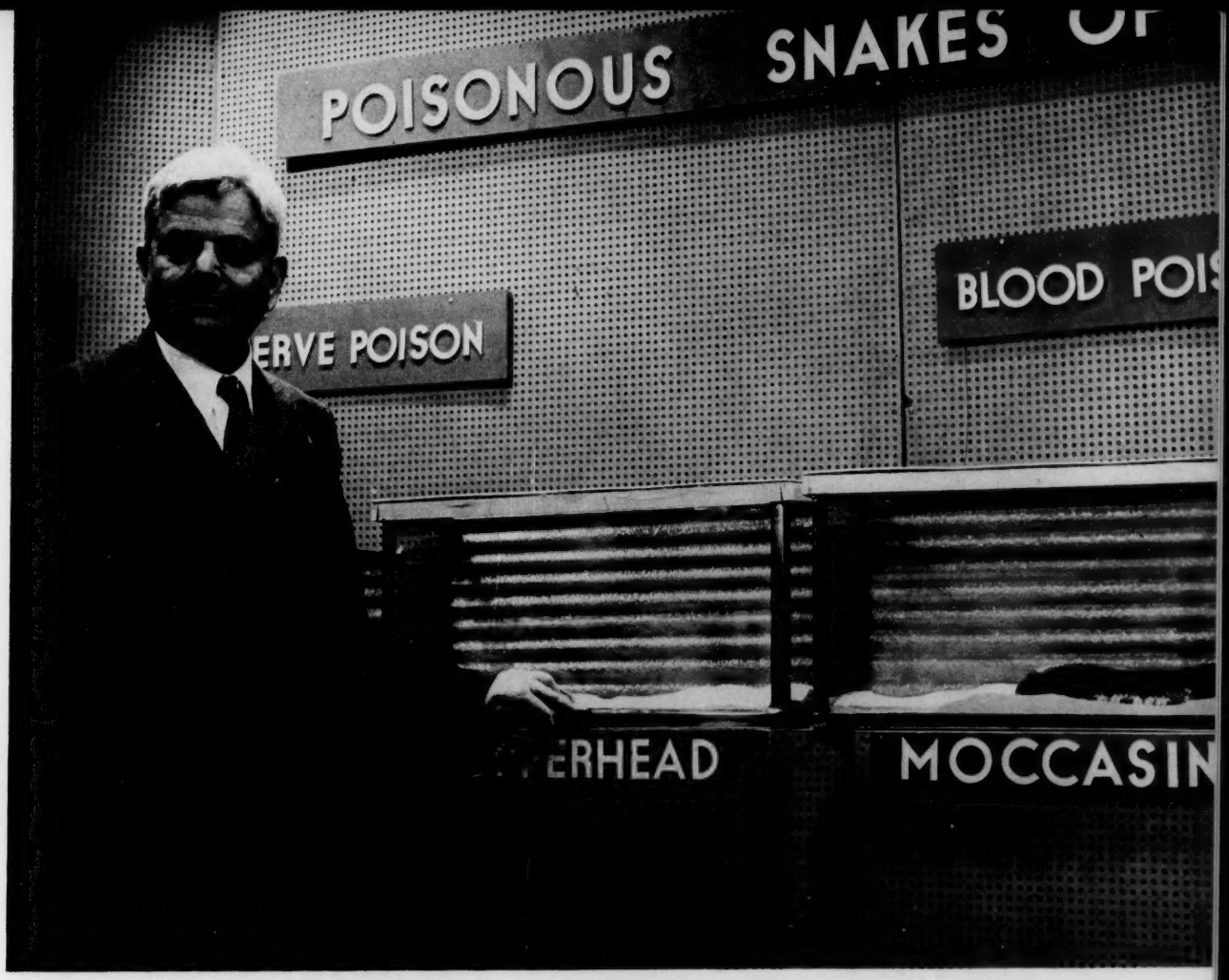
Made to order as "further reading" for the article above, this is an enchanting and illumined book of place and people—of Sarawak and its Dayaks, Malays, and Chinese, but especially of the Ibans, the group most beloved by Malcolm MacDonald, Governor-General of Malaya and British Borneo. With these robust, friendly, courteous, and intelligent up-river tribesmen he fell in love on his first official visit to them. In the course of frequent visits he came to known many of their chiefs and their families intimately, especially the grand old paramount chief, the Penghulu Temonggong Koh, and his lovely young daughters Mindun and Segura. Indeed, he was adopted by Koh as a son. This is also a tale of transition, for the old Iban way is inevitably going to limbo in the path of progress—that is, before the onrush of European civiliation with its education, governmental forms, and material development—and the author sees it as generally good if not rushed but fraught with the makings of individual tragedy. This is exemplified in the touching story of Segura, whom he saw change from unspoiled pagan girlhood through rejection of the old way into trial of the new, which brought her to near disaster. This is a profoundly moving book, filled with insight, written with flow and wit and charm of style.

D.G.K.





↑ Chinese gongs are one sign of Iban affluence, → Chinese vases another. At the lower left are sheets of crudely smoked rubber taken from trees growing wild in the jungle.



Laurence M. Klauber, rattlesnake expert. (CAS photo by Elmer Moss)

El Señor de las Serpientes

UNLESS SOME FUTURE herpetologist begins mighty early in life to get up at the daily crack of dawn and work until moon-set for a full quota of productive years at research on the components of the family Crotalidae, there can hardly be a successor to the present world authority on rattlesnakes.

Laurence M. Klauber, a native and resident of San Diego, appears to have cinched the title for a long, long time to come. Dr. Klauber, who prefers his friends to call him Laurie or, at most, "Mister," stands as a giant in the crotalid sciences of the New World. This geographic limitation arises from the fact that rattlesnakes—all of the sixty-five-odd species and subspecies presently recognized—are entirely New World animals.

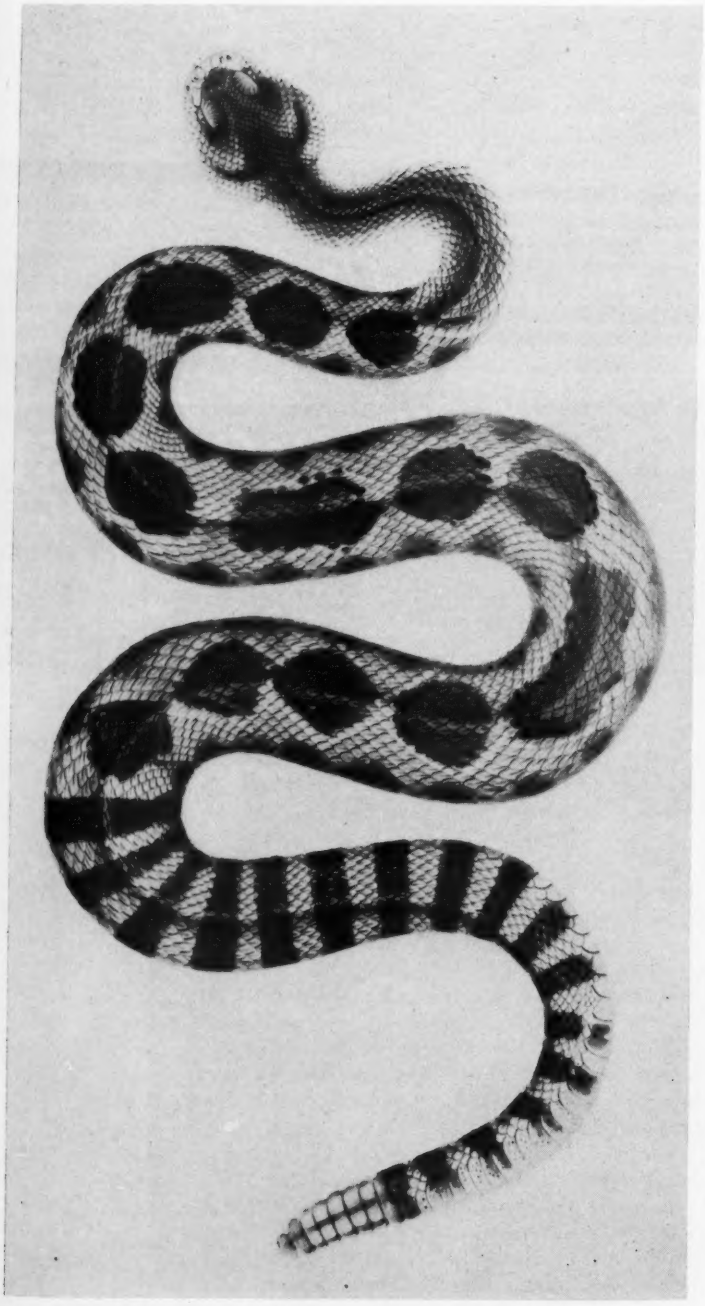
Laurence Klauber's first scientific paper, "Notes on the Distribution of Snakes in San Diego County, California," appeared in 1924. Since that time his research reports concerned with herpetology and increasingly with rattlesnakes have come in a steady flow. The culmination of thirty-five years of rattler study is encompased in his two-volume work published in 1956 by the University of California Press for the Zoölogical Society of San Diego. He has long been associated with the latter institution and at one time served as its president.

The book is entitled *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind.*

Laurence Klauber just doesn't look like the world authority on rattlesnakes, whatever look that distinction conjures up. He is a six footer, white maned, clear blue eyed—a healthy American business man. He is

friendly, affable, jolly, and the best company anyone could want. His devotion to science has been an avocation. By profession he is an eminently successful engineer and business executive.

His is a heartening American success story. A Stanford graduate in 1908, he got a job at the electric power plant in his home town. Hard work and diligence moved him up through the ranks to become successively president and chairman of the board, a position from which he is now retired after a fifty-year career with the San Diego Gas and Electric Company. He married and raised a family. A principal difference from the usual to be noted is that the Klauber home, overlooking San Diego Bay, during most of this period was acquiring a stock of pickled rattlesnake specimens—eight thousand of them—besides some 25,000 other herptiles.



A carefully detailed artist's rendering from Charles Wilkes' report, *U. S. Exploring Expeditions, 1838-1842* (*Atlas of Herpetology*, prepared by Spencer F. Baird).

Mr. Klauber dedicated his monumental work to his wife with these words: "To my wife, Grace, who not only endured a basement full of rattlesnakes for more than thirty years, but also suffered the annoying imposition of austerity that goes with research in the home." One time at a party in Mrs. Klauber's honor, she was yclept "Saint Grace" by admiring friends who today see the fruits of her compassion but still find it hard to understand how she put up with it.

Mr. Klauber's engineering abilities found application to his research when he devised a number of instruments, among them one to determine the speed of vibration of a rattler's rattle. In classifying snakes Mr. Klauber was an early user of the rapidly expanding methods of mathematical statistics, by which some of the uncertainties involved in recognizing and segregating species have been eliminated. Indeed, in one instance a collection of rattlesnakes from a Mexican mountain were superficially so uniform as to seem to comprise a single species. But the mathematical application of certain standards of variation showed that there were, in fact, two species, one hitherto unnamed.

Klauber, in his rattlesnake publications, has sought neither to exaggerate nor to minimize the danger from these much feared creatures. Although he has handled many alive, including the "milking" of the venom from more than five thousand of them for use in scientific studies, he now leaves such activities to younger men with sprier fingers. One of the purposes of his book has been to offer safety rules whereby hunters, hikers, and campers may reduce the chance of being bitten, as well as danger to life if it should happen. The statistics resulting from Mr. Klauber's studies show that the rattlesnake-bite mortality rate, since the advent of modern treatment, is only about 3 per cent. Though it probably never exceeded 10 or 15 per cent, even in the days of the most outlandish folklore treatments, the colonists thought a bite invariably fatal, an erroneous idea still widespread.

Laurence Klauber's two-volume definitive work as well as his other researches and collections have been widely reviewed and acclaimed. His herpetological library, including many old works now rare, is notable. His career in science has a double aspect that cannot be overlooked. He insistently maintains first of all

From *An Essay of Serpents* by Charles Owen (London, 1747), "with copper plates engraved by the best hands."

that he is an amateur scientist, that his reptile work has been an avocation. Granting this concession to modesty, he has further demonstrated the great good and substantial contribution to knowledge that comes of consistent application to a single field of scientific endeavor. Happily he has brought to a suitable stage of completion his arduous work and is on the scene to know of the universal respect it has won.

How does "El Señor" feel about "las serpientes" after a lifetime of intimate association with them? The best answer to this is perhaps to be found in the concluding paragraphs to his book:

"Of all [the myths about them], that which has most deeply affected human impressions and attitudes toward rattlesnakes is the one that pictures these snakes as malignant, vindictive, and crafty, with an especial hatred of mankind. Recently a radio commentator called rattlesnakes the 'symbol of pure evil.'

"But a rattlesnake is only a primitive creature with rudimentary perceptions and reactions. Dangerous it surely is, and I hold no brief for its survival except in remote areas where its capacity to destroy harmful rodents may be exercised without danger to man or his domestic animals. But that the rattlesnake bears an especial enmity toward man is mythical. It seeks only to defend itself from injury by intruders of superior size, of which man is one. It could not, through the ages, have developed any especial enmity for man, since the first human being any rattlesnake may encounter is usually the last."

BENJAMIN DRAPER

Complete file on a Public Enemy

Rattlesnakes: *Their Habits, Life Histories, and Influence on Mankind.* In Two Volumes. By Laurence M. Klauber. Published for the Zoölogical Society of San Diego by the University of California Press, Berkeley and Los Angeles. 1956. xxix + 1476 pp., 243 illus. in halftone and line, full-color frontis. in each vol. $17.50.

"In a way, this book is an encyclopedia of the rattlesnake," Laurence M. Klauber says in a brief Preface to *Rattlesnakes.* "In it both the rattlesnake's reactions to its environment and man's reaction to rattlesnakes have been surveyed. Among other objectives, I have sought to disentangle rattlesnakes as they are from rattlesnakes as people imagine them to be." In that last sentence is the key to the vast usefulness of this scholarly but popularly styled book. Few American animals have given rise to such mountains of myth as the rattler; the need to have Mr. Klauber's unique mountain of knowledge sluiced down and refined into the negotiable stuff of print was proportionately great. To be sure, published pages on the rattlesnake were numerous and well scattered—witness Klauber's admittedly far from complete bibliography of full three thousand items. But how was the seeker of factual answers to the myriad questions about this perennially fascinating reptile to wander blindly through the maze of literature—both with the hope of finding his answers and with confidence in their reliability? Not only that, for until this tireless San Diegan's years of intensive and original research had been rounded into the definitive work now available, much of the basic knowledge was quite unknown.

The scope of the work may be glimpsed in the main chapter headings: status (definitions, general considerations, "rules of the game"); classification and identification; paleontology and phylogeny; morphology; the rattle; bodily functions; behavior; populations and ecology; food; reproduction; poison apparatus; the bite and its effects; treatment and prevention of the bite; control and utilization; enemies of rattlesnakes; Indians and rattlesnakes; post-Columbian knowledge of rattlesnakes; myths, folklore, and tall stories. There is of course a voluminous index. The book is eminently designed for reference, with that "casual seeker for the facts"—even "some single fact to settle a bet"—in mind fully "as well as the student with a broader purpose."

It would be unjust to the scientific modesty of the author to convey the impression that he considers his *Rattlesnakes* the last word, now and for ever. Indeed, Mr. Klauber hopes "that it may encourage renewed investigations and observations respecting those phases of rattlesnake life now imperfectly understood or unknown." At the very least, he has for all future scientific workers assembled the scattered bits and pieces of old material, added a mighty lot of new stuff, and welded the whole into a firm foundation structure to build upon, with the ground cleared around it and the rubbish disposed of. Such an achievement is a noble life work in any science. D.G.K.

Academy trio poised for practice session before eclipse day. In foreground are six photo-electric units for shadow-band study.

THE DARK THAT FAILED

PATIENCE is a virtue essential to happiness and well being. This applies particularly to scientists who, in some cases, may spend a whole lifetime searching for some elusive answer to their research. It should very definitely be part of the makeup of an astronomer who travels to some distant place to observe a total eclipse of the sun. The patience of such a person may be strained to the testing point when he twice makes a long trek to place himself in an advantageous position for an eclipse and twice is frustrated by clouds covering the sun at the moment of climax.

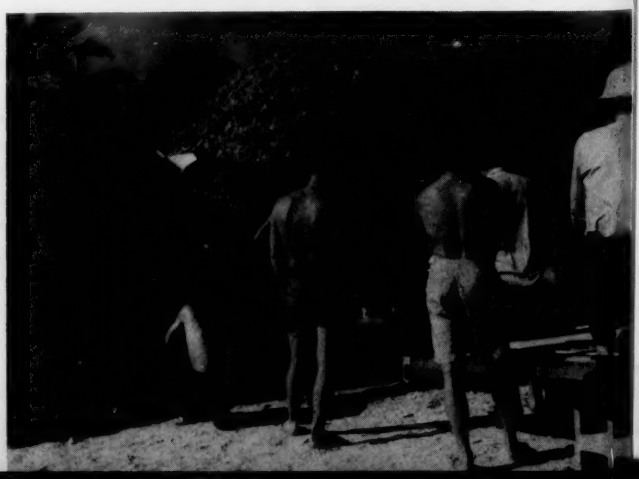
In 1954, Mr. C. P. Butler, a research associate of the Department of Astronomy of the California Academy of Sciences, went with Mr. L. E. Salanave, then Associate Curator of the department, to southern Sweden for the observation of a solar eclipse. Again this year Mr. Butler was a member of the Academy party which traveled five thousand miles into the south Pacific to observe another eclipse. Both times mother nature proved herself capricious by hiding the sun from view with clouds. Mr. Butler has begun to wonder if his presence is a jinx upon any expedition with which he is associated. He has been assured that it will require many more tests than this to prove him guilty.

Mr. Butler was not the only one disappointed at the site of the October 12 eclipse this year. Thirty-six scientists from several institutions were poised for the concentrated observation of the celestial drama. A great many hours had gone into the design and construction of special equipment for the occasion. The group had arrived some six weeks in advance of the eclipse day and had set up and tested their instruments. They had practiced over and over again to make certain that their timing would be correct to take full advantage of the few short minutes when the bright disc of the sun would be covered by the moon.

There had been days of drenching tropical rain—too many such days. No reliable information was available on the probability of rain at this season, and every day of rain dampened the spirits of the group. There were some of the projects which would be successful regardless of the weather at the time of the eclipse, but the rainy days during the set-up time hampered even those projects. Electronic equipment was connected up and left running day and night to keep moisture from condensing in it. Film was kept in sealed containers to keep it dry. But the scientists themselves took advantage of the heavier downpours to rush outside with a bar of soap and luxuriate in the cooling shower provided by nature.

From the weather conditions during the first five weeks, the average number of hours of clear weather was so small as to indicate a very poor chance of a clear morning on the day of the eclipse. Five days before eclipse day the weather turned fine. A few towering cumulus clouds could be seen on the distant horizon, and occasionally a cloud would drift over the island camp. This weather held all during the week, and by Friday before the eclipse Sunday hopes were high that it would continue. The fine weather created some discomfort, for the tropical sun beat down during the day to fry those who had to be outside, and with the high humidity those who worked inside roasted just as uncomfortably in their own juice.

On that Friday morning a mass rehearsal was conducted. At the time the eclipse would occur on Sunday, all the equipment was operated just as it would be on that day. The Navy had provided the camp with two large electrical generators and on the eclipse day both of them were to be used. On the morning of the rehearsal, the two generators were running and all was in readiness. At 8:46 all equipment was turned on, all the camera drives, all the electronic measuring devices, and all the vacuum motors and blowers. The system held up for two seconds then the main circuit



Pukapuka scientists gather for a meeting.

breakers went out. All the whirring blower motors slowly dropped in pitch, all the electronic equipment went dead, and all the mirrors which were turning so smoothly to follow the sun abruptly halted and the images of the sun so carefully centered in instruments all over the camp began to creep slowly off their targets.

It was a simple matter to alter the electrical system so that this would not happen again, and the following morning when a second rehearsal was held, everything went very well. Even this day, the last day before the eclipse, was a beautiful one. Everyone made last minute preparations. The men of the combined party from the High Altitude Observatory of the University of Colorado and the Sacramento Peak Observatory of the U.S. Air Force worked all night long both Friday and Saturday nights to get their elaborate equipment in its best working condition.

Sunday morning broke bright and clear. A few cumulus clouds could be seen on the horizon and it looked most promising. The High Altitude-Sac Peak people had emptied their huge cameras of the practice film, and had reloaded with the fresh film taken out of storage. The old film lay stretched out along the beach in 500-foot ribbons. The cook served breakfast early; everyone ate and hurried back to his equipment.

Our own equipment was quite simple and it had been in readiness for several days. We made a final check of the time, setting our chronometer with the time signal from the Naval Observatory by radio. We then settled ourselves near our operating posts to watch for the first contact, the first little nick showing in the edge of the sun when the moon first touches it. This is a very difficult observation to make, but it appeared that it occurred on time. It was 7:38 A.M. and the sky was beginning to show some clouds. There was over an hour before the moon would completely cover the sun, and as cloud layers began to approach the sun, we crossed our fingers and hoped desperately that the clouds would move over us and away before the zero hour.

An hour passed and the clouds still obscured the sun, and furthermore showed no signs of breaking. Everyone was mentally wringing his hands. As the instant of totality approached, a large break appeared in the clouds, but not in the direction of the sun. The blue of the sky grew deeper and deeper, the darkening accelerating as the seconds passed, then suddenly it was dark, about the degree of darkness that exists on a bright moonlight night. The planet Venus and two or three bright stars appeared in the break in the clouds, but the sun remained obscured. Four minutes and three seconds passed and the sky suddenly brightened.—The eclipse was over!

The expedition to Pukapuka in the Cook Islands, so elaborately planned and so succesfully executed through the support of the U.S. Navy, was only partially successful. Four of the projects came through. Three of them were studies of the radio emission of the sun or the effect of the sun upon the radio reflecting layers in the earth's atmosphere and the glow of the air itself. The weather did not hamper the radio observations and the air glow could be studied through the break in the clouds. The fourth was a spectacular experiment conducted by the Naval Research Laboratory consisting of the study of the far ultraviolet and X-ray radiations from the sun by means of equipment sent aloft by high-altitude rocket. Six rockets were launched from aboard the ship 40 miles from the island. These rockets carried measuring devices to a height of over 150 miles, and the information was received from radio transmitters contained in the maze of equipment within the rocket. This experiment was highly successful. Ironically the eclipsed sun could be seen from aboard the ship!

All those experiments which depended upon a clear view of the sun failed. Our own was among these. But with four successes and three failures, one may conclude that the expedition was well worth the effort.

G.W.B.

SKY DIARY

November, December, 1958

(Pacific STANDARD Time used throughout)

Phases of the Moon

☾	Last Quarter	November 4	6:19 A.M.
●	New Moon	10	10:34 P.M.
☽	First Quarter	17	8:59 P.M.
○	Full Moon	26	2:16 A.M.
☾	Last Quarter	December 3	5:24 P.M.
●	New Moon	10	9:23 A.M.
☽	First Quarter	17	3:52 P.M.
○	Full Moon	25	7:54 P.M.

Meteor Showers

November 16-17—**Leonids:** maximum about 20 per hour. Duration of shower: about three days. Look above Eastern horizon after midnight.

December 13-14—**Geminids:** maximum about 40 per hour on that night, with duration of 5 days around it. Radiant about overhead after midnight.

The Planets

Mercury: Reaches greatest eastern elongation on November 20 when it will be low in the western sky at sunset (mag. —0.1). The first part of December, Mercury will be too close to the sun for observation, being in inferior conjunction on December 9th. On December 29 it will reach greatest western elongation and should be seen low in the southeast just before sunrise.

Venus: During November too close to the sun for observation, being in superior conjunction on November 11. Becomes an evening star in late December but still too close to the sun for easy observation.

Earth: Winter begins on December 22 at 12:40 A.M.

Mars: During November Mars is the brightest object in the evening sky except the moon. On November 15 it is of magnitude —2.0 and close to the Pleiades. It is nearest to the earth on the 8th and in opposition on the 16th. By mid-December it is well above the eastern horizon at sunset and although not as bright (mag. —1.1) remains prominent in the evening sky. It is now in Aries and resumes its direct motion eastward on the 20th.

Jupiter: Too close to the sun for observation during November. By mid-December it reaches (mag. —1.3) and is in the constellation of Libra and may be seen as a morning star low in the southeast before sunrise.

Saturn: By mid-November (mag. +0.7) low in the southwest setting about two hours after the sun. Too close to the sun for observation during December, being in conjunction on the 20th.

Give them alarm clocks?

Beggars on Golden Stools: *Report on Latin America.* By Peter Schmid. Translated from the German by Mervyn Savill. Frederick A. Praeger, New York. 1956. 327 pp., 28 photos. $5.00.

From the tight little European nation which is politically and materially organized like a fine watch, and is one of the mainsprings of world commerce and finance, it is a long jump to the sprawling, brawling conglomerate of countries we call Latin America. For the energetic and scholarly Swiss journalist Peter Schmid, the jump is far longer in mind and time than it is in air distance. His progressive attitudes must leap backwards across the temporal chasm that still splits so much of America—Mexico and south to the Pampas—off from the rest of the modern Western World. And this is what makes Dr. Schmid's "report," in the reviewer's opinion (paraphrasing the publisher's slogan), a book that matters: the author can read clearly and sympathetically the face of South America's laggard time clock, while understanding the mechanism behind it. He sees, too, the winding key—in the alien grasp that wrested it once from "its children the Indios" and still holds it. "South America is synonymous with minerals, meat, petrol, and coffee. It is the continent of the future—no longer the future of its own people but of the others, the foreign calculators who understand organization and work with the regularity of alarm clocks."

What will absorb most readers, very likely, is the procession of poignant pictures that make the foreground of real life—everyday life—in rhythmic flow against the discordant backdrop of political turmoil and economic chaos. The sharp vignettes are like fine photography. You ride a second-class bus in Mexico: a barefooted *peon* "clambers in, sits down next to you in his bright-colored poncho, his naked, cracked and calloused feet in sandals made of old tyres; and an odour of the soil assails your nostrils. Here you begin to learn what a foot actually is . . . a foot with a destiny; moulded by the earth it tramples." In Ecuador you are guest for the moment in the hut of one of Otavalo's courteous and conscientious Indian weavers; in Peru you marvel at Machu Picchu's incredible masonry; and on his last day in Rio the author invites you to follow him "along the quays of its incomparably beautiful bay and watch the yellow light in evening climb up the white cliffs of houses and vanish into the darkening blue haze . . . South America!" he reflects. "Its children . . . sit upon the greatest material wealth of the globe and grieve in a dream for an imaginary world. They call themselves pathetic beggars on golden stools, and this is exactly what they are . . ." Is it their fate that aliens must kick the stools from under them and push them across the time-gap to the future? Dr. Schmid appears to believe that it is.

Old explorer's final legacy

Peter Freuchen's Book of the Seven Seas. By Peter Freuchen, with David Loth. Julian Messner, Inc., New York. 512 pp., profusely illustrated. $8.95.

Invoking personal experience, here is *par excellence* the book for the youthful reader whose enthusiasm for adventure and discovery, having waxed on the fiction classics, demands the satisfaction of something that is for real. Whether or not the well worn track from R.L.S. to Verne to Melville to Nordhoff and Hall is still being run by today's jet and space travel-minded youngsters; whether they still wallow happily in blood on the decks of pirate ships and men-of-war in rousing tales of mighty men; whether, still, they dive with Beebe or round the Horn with Riesenberg: the lure and the lore of the sea is bred into their young bones and blood, moon-rocket and Mars Patrol notwithstanding. Quite a few thousand copies of *Peter Freuchen's Book of the Seven Seas* have entered American homes by "courtesy" of a well known book club, and this is good. On the jacket the hard-bitten old seaman's knotted hands spin the yellowed globe (in the Explorer's Club?), while those iron-gray whiskers of TV note fairly quiver with the memory of icy winds and the spume of arctic seas. Their owner was one of the old school arctic hands and lived the part to the end, leaving his name identified, in a legion of listener and reader minds, with all that the old school stood for. So it is possible that, as their parents rediscover youthful enthusiasms in these brawny pages, kids are even now discovering here the element that gave life to all that lives; learning of its birth on the cooling globe, of the myriad life it teems with, its own mysteries of tide and wave and wind and current, of deep and shore; of its bearing the tides of men to life and hope, death and destruction, greed and glory; of ships and their voyages of discovery, or whaling and fighting and treasure-seeking; of the "romantic," the "rugged" and the "lonely" islands; of marvels and mysteries; even of resources for the future and of the laws by which men govern their use of the crowded and lonesome sea. All these things are here, and will be worth knowing as long as there are seas and men.

I Sailed with Rasmussen. By Peter Freuchen. Julian Messner, Inc., New York. 1958. 224 pp., 38 photos, 3 maps. $3.95.

In the last of his books to appear in English, the late Peter Freuchen recounts the years of his life between 25 and about 40 which were intimately bound up with the career of the famed Greenlander Knud Rasmussen. He tells how Knud, whose mother was part Eskimo, felt a strong attachment for these northern people, an identification which led him to become a world-renowned and honored ethnologist in the 30 years he devoted to the Eskimos, their way of life and their origins. The two young Danes—Knud, five years older, was born in Jakobshavn, Greenland, where his father was a missionary—together founded the station at Thule as a base for exploring and trading. Their comings and goings across Greenland's ice cap and fjords; their life among Eskimo hunters; their returns to Denmark; their much interrupted family life (curiously, the part-Eskimo Knud married a Danish gentlewoman; Peter, a lovely Eskimo girl); their last big expedition to Hudson Bay to study Canadian Eskimos, are told with a direct simplicity which is warmed but not warped by a bit of hero-worship of his friend by the author. This introduction may send you to some of Rasmussen's own works, such as *Across Arctic America* (1927).

East by pen, picture, and pan

South Asia. By Hans Keusen and Michael Edwardes. Frederick A. Praeger, New York. 1958. 22 pp. text, 128 gravure, 28 color photos. $8.50.

With a young Englishman's word-introduction and captions—a bit self-conscious, a trifle over-written, yet compellingly expressive of the "no such thing" that is the " 'East' " —here is a sumptuous portfolio of very nearly perfect photographs by a Swiss. Edwardes talks mainly of India, with glimpses of Burma, Thailand, Viet-Nam—World War II and post-war glimpses—and he is full of personal subjectivity. Perhaps this is the best way to get some of the fantastic sides of the East across—about many of them it is hard to be objective. Or perhaps old Mother India is like the others only more so—I did not get to India. My own reactions to some of the rest—Thailand, for instance—were,

more often than not, that all this was not quite so utterly strange as I had expected it to be. Nevertheless, and despite the almost too professional quality of Keusen's photos, this is both a memento of things seen and a treasury of things unseen by one traveler. It would be carping to opine that the photos have more the feel of a planned professional job of "covering" a given beat, than that of the casual, happy-chance takes of a wandering amateur—carping, or sour-graping. For these *are* excelling photographs.

The Far Eastern Epicure: *A Culinary Journey to the Far East with Original Recipes and Drawings.* By Maria Kozslik Donovan. Doubleday & Company, Inc., Garden City, New York. 1958. 191 pp., line drawings. $3.95.

Does your mother or your wife like to get a new cook book every once in a while? Like to try new things? Ever wish you knew how the Chinese and Japanese get those subtle flavors and textures? Long for gustatory reminders of some of the strange places you've been? Here is a book for all these uses as well as for reading. For it is more than a cook book. It is also a travel book—shall we say, of travel from one aromatic kitchen to the next, doing research in the science of gastronomy? Hungarian-born Maria (Mrs.) Donovan has studied at Chicago and Colorado universities and now lives in Melbourne, so she knows how to make things clear for the non-Oriental housewife when it comes to the actual soto babats, dim sims, nigiri-sushis, and other intriguing items that are detailed on the recipe pages.

A golden book of science

The World of Science: *Scientists at Work Today in Many Challenging Fields.* By Jane Werner Watson. Simon and Schuster, New York. 1958. 216 pp., 265 color photographs and diagrams, endpaper charts in color. $4.95.

If you have a 7th- or 8th-grader, or even a high schooler on your list, who has a bent toward science, or whom you'd like to spur in that direction because you see indicators the child isn't yet aware of, give him or her this Deluxe Golden Book. It might prove the key to a useful and interesting future. It will at the very least help to stir up long-lasting interest in what geologists, astronomers, physicists, mathematicians, chemists, biologists, and engineers are doing and give some idea why they are—or generally seem to be—happy doing it. The wonder of such a book to the parent or other well seasoned adult is that the kids in school today can get hold of things like base-two numbers—what an electronic "brain" thinks with—while our generation could barely cope with simple fractions. Is it partly because we had few such wonderful books as this to make us *want* to learn the inside stuff about such things as science? We might mention that our eighth-grade son's science teacher was delighted with this book, along with our son, who asked if he could take it to school. We have a feeling this is just what the author and publisher hope for.

The Nature Trail

John and William Bartram's America: *Selections from the Writings of the Philadelphia Naturalists.* Edited with an Introduction by Helen Gere Cruickshank. Foreword by B. Bartram Cadbury. Illustrated by Francis Lee Jacques. The Devin-Adair Company, New York. 1957. xxii + 418 pp., halftones, line drawings, endpaper maps. $5.00.

Fourth in the Devin-Adair American Naturalists Series, this handsome and well edited volume drawn from the life work of the Bartrams, father and son, tells of explorations in the American world of nature in the times before wildernesses had to be sought for in the West. John Bartram was mentioned as having founded America's first botanic garden. His son William became one of our earliest great nature artists (shown here in halftone are a few of his drawings, ranging from a Seminole chief to a rattlesnake's head to a strangely mythical alligator to various plants and birds—all life and nature was his subject matter). From Alexandria, Virginia, the Bartrams' trails crisscross the Southern seaboard to Cape Canaveral. William's *Travels* and *Journal*, John's diamies, and the various papers and mss. from their hands, add up to a fascinating picture of an America that existed before Nuttall and Gambel took up the trail.

The Audubon Book of True Nature Stories. Selected and edited by John K. Terres. Illustrated by Walter W. Ferguson. Thomas Y. Crowell Company, New York. 1958. x + 294 pp. $5.00.

Pelorus Jack was a Risso's dolphin, his natural habitat the North Atlantic. In the 1880's he appeared in Cook Strait between New Zealand's North and South islands. From that time until April, 1912, he met every vessel entering Pelorus Sound, played around her, and "piloted" her. He became well known and beloved of skippers, hands, and passengers. Several malicious attempts on his life prompted a New Zealand Government Order in Council prohibiting "the taking of the fish or mammal known as Risso's dolphin (*Grampus griseus*) in Cook Strait and the adjacent bays, sounds, and estuaries." Thus Pelorus Jack became "the only individual dolphin that had inspired the writing of a law for his protection" as Cyrus Cress says in one of the 48 stories in this anthology compiled from the pages of the *Audubon Magazine* by its editor John K. Terres.

Pelorus Jack appealed to this reviewer because a few months ago he crossed Cook Strait on just such a vessel as the friendly dolphin would have escorted—fifty years ago. Each of the stories will strike a response in some reader for some deeply personal reason: who has not had a heartwarming experience—or many—with some wild creature? And what friend of wildlife, from deer to deer mouse, is not grateful for such writers as Edwin Way Teale, Lorus and Margery Milne, Frank Gander, William D. Berry, and the host of others who help build a firm bridge between the animal mind and the human heart? They are front-line fighters for conservation, besides.

With Walter Ferguson's lovely drawings, this is a fine gift book for the nature lover on your list.

Living Birds of the World. By E. Thomas Gilliard. Doubleday & Company, Inc., Garden City, New York [a Chanticleer Press Edition]. 1958. 400 pp., 217 full-color and 183 halftone photographs. $12.50.

Another in Doubleday's large-format World of Nature Series, Dr. Gilliard's book invites comparison with Barruel's *Birds of the World* (Oxford, New York, 1954). Similarity largely ends with format and price. Barruel delves into bird biology under such broad headings as "daily activities," "reproduction," "migration," "populations," the illustrations reflecting this topical approach. Dr. Gilliard (Associated Curator of Birds, American Museum of Natural History), on the other hand, gives us a systematic synopsis of the class from the world view, illustrated with outstanding examples of each group. Thus the bird lover can see how his favorites at home fit into the world picture. In his own study, for example, he can experience the pleasure of discovering that our belted kingfisher and Australia's famous kookaburra are of the same family, which is primarily a tropical one of Australasia (Southeast Asia to South Pacific islands). In all, 1,500 species are dealt with in the text.

Illustrated by some of the world's top bird photographers, with color reproduction truly magnificent, this is one of the best nature gift books of the year.

The Fossil Book: *A Record of Prehistoric Life.* By Carroll Lane Fenton & Mildred Adams Fenton. Doubleday & Company, Inc., Garden City, New York. xiii + 482 pp., 8 full-color plates, hundreds of photographs and drawings. $12.50.

Only the Fentons could top their own previous books—those exquisitely illustrated books about the earth and its past and present life, many, but not all of them, especially designed for young readers. *The Fossil Book* tops not only earlier Fentons but just about everything else we can think of in its field. Far more than just a fossil book, this is nothing less than the story of the evolution of animal and plant life (with emphasis heavy on animals, it should be noted). The plan is phylogenetic so that—following the introductory chapters on the occurrence, meaning, naming, and relationships of fossil remains, and consideration of the rock formations in which they occur—the student progresses from simple forms, such as protists on the plant-animal borderline, sponges, coelenterates, and so on, up to mammals. The authors recognize, of course, the fact that no straight-line simplification of a vastly complex subject is possible, even if it were to seem desirable. Coming to Chapter XVII, "When Trilobites Roamed," they begin thus: "No one can tell a simple, continuous story of fossils, especially those that lack backbones. For the world of invertebrates is not simple. . . . We can only deal with them group by group and, having told the story of one, must go back to remote antiquity to begin the record of another." A fair statement of method; yet despite the inherent difficulty that only one picture can be viewed, and one story heard at one time, the Fentons' book is like an enormous aquarium and zoölogical garden in which all past forms are brought back to life and displayed in proper habitats, from ocean depth to desert, and you wander through in utter fascination with a competent guide at your shoulder telling you how each thing lived and came to be what it was. The word student was used above, advisedly. Not only is this the complete fossil book for all the family, it would be hard to imagine a more stimulating text book, right up into beginning college paleontology. The lucid text aside, Carroll Fenton's drawings are both meticulous and lifelike. He is surely one of the best in the "restoration" business, turning fossils into a graphic zoo of lifelike animals. All in all, this is certainly one of the outstanding natural history books of the year. (Incidentally, thank you, Mr. and Mrs. Fenton, for your "excellent" rating of *Pacific Discovery* in your closing chapter, XXXIV, "Read, See and Collect." In return, we should try to present more paleontology!) D.G.K.

Two juveniles co-authored and illustrated by Carroll Lane Fenton which escaped previous mention: **Insects and Their World,** with Dorothy Constance Pallas (The John Day Company, New York, 1957; 95 pp., 140 drawings; $2.95); **Plants That Feed Us:** *The Story of Grains and Vegetables,* with Herminie Kitchen (The John Day Company, New York, 1956; 95 pp., numerous drawings; $2.75).

Also in the juvenile field are two in the Young Naturalist Series of The Macmillan Company, New York, both by Clarence J. Hylander, an experienced natural history writer: **Insects on Parade** (1957; xiii + 208 pp., illustrated with drawings and photos; $3.75); **Animals in Fur** (1956; vii + 206 pp., photos and drawings; $3.50). The Ronald Press Company, New York, published a **Boy's Book of Frogs, Toads, and Salamanders,** by Percy A. Morris (1957; iv + 240 pp., numerous halftones and text figures; $4.00). From William Morrow and Company, New York: **Insect Engineers:** The Story of Ants, by Ruth Bartlett (1957; 128 pp., illustrated by the author; $2.75); **Tropical Rain Forests,** by Delia Goetz (1957; 64 pp., halftone drawings by Louis Darling; $2.50); and **Penguins,** by Louis Darling (1956; 64 pp., illustrated by the author; $2.00). Henry Z. Walck, Inc., New York, has taken over from Oxford a juvenile nature list—recently received: **Rocks and Rain and the Rays of the Sun,** by William Fox (1958; 90 pp., illustrated in halftone and line; $3.00; ages 8-12); **Wildlife for America,** by Edward H. Graham and William R. Van Dersal (1949; third printing, 1955; 110 pp., photographs; $3.75); and **The Land Renewed:** *The Story of Soil Conservation* (1946; fifth printing, 1957; 110 pp., photos; $3.75; ages 12-16).

A well-researched and vigorously written story-form biography for juniors is **John Wesley Powell:** *Geologist-Explorer,* by Dale White (Julian Messner, Inc., New York; 1958; 192 pp.; $2.95).

Special mention: **Wild Animals of the Far West,** by Adrien Stoutenburg, illustrated by Ruth Robbins (Parnassus Press, Berkeley; 1958; 150 pp., 2-color, soft pencil and wash drawings; $3.75)—the Parnassus editor-art director combination has turned out something here not only charmingly styled but truthful enough to have the endorsement of a Foreword by the Academy's curator of birds and mammals, Dr. Robert T. Orr.

Here are some important guide and reference books for all users: **Getting Acquainted with Minerals,** by George Letchworth English and David E. Jensen (McGaw-Hill Book Company, Inc., New York; 1958; x + 362 pp., 355 figures in halftone and line; $6.95)—second edition, completely revised and enlarged, of "a standard illustrated guide for collecting and identifying more than 500 rare, unusual, and common minerals"—no color plates, but an attractive book nevertheless. **Animal Tracks and Hunter Signs,** by Ernest Thompson Seton (Doubleday & Company, Inc., Garden City, New York; 1958; 160 pp., numerous line drawings by the author; $3.75—posthumous work lately completed by Mrs. Seton. In the Peterson Field Guid Series—**A Field Guide to Reptiles and Amphibians** *of the United States and Canada East of the 100th Meridan,* by Roger Conant, illustrated by Isabelle Hunt Conant (Houghton Mifflin Company, Boston; 1958; xv + 366 pp., over 1100 illustrations with more than 400 in full color; $3.95). From the Naturegraph Co., San Martin, California, Vol. 4 of the American Wildlife Region Series—**Wildlife of the Intermountain West,** by Vinson Brown, Charles Yocum, and Aldine Starbuck (1958; 144 pp., profusely illustrated in halftone and line; paper, $2.50). An English import from The Macmillan Company, New York—**Cloud Study:** *A Pictorial Guide,* by F. H. Ludlam and R. S. Scorer (1958; 80 pp., 74 photographs, 9 line figs.; $2.95); at least four of the excellent photos are in color; captions explain in detail how each type of cloud was formed. Clouds recognize no boundaries, so this should be usable anywhere on earth! An import from The Studio Publications, Inc., in association with Thomas Y. Crowell Company, New York—**What Wood Is That?** *A Guide to the Identification of Home-Grown, and Imported Timbers with 40 Actual Timber Samples,* by Alfred Schwankl, translated and edited by H. L. Edlin (1956; xv + 164 pp., 125 text figs. in halftone and line; $6.50)—a most intriguing item for the wood enthusiast or timber user, with real veneer slices pasted on cards, the world's leading cabinet and some building woods. And another Macmillan import—**Chambers's Technical Dictionary,** edited by C. F. Tweney and L. E. C. Hughes (third edition revised with supplement; 1958; viii + 1028 pp.; $7.50)—this valuable reference work first published 1940, has 60,000 terms from 120 scientific and industrial fields. Also worthy of note is the Crowell **Concise Science Encyclopedia,** edited by G. E. Speck (New York, 1955; 256 pp., 30 halftones: $3.50).

"Pacific Crest Trail"

EDITOR, *Pacific Discovery:*

The Pacific Crest Trail in northern California between Lake Tahoe and the Oregon line seems to be lost. Your very fine article (March-April) states that the trail is generally completed from the Canadian line to the Mexican border. I have been across the country between Routes 99 and 395 quite a few times and have never seen a sign denoting either Pacific Crest or Lava Crest Trail.

I have written the supervisors of Shasta, Lassen, and Plumas national forests. I received courteous and quick replies which, when put together, indicate nothing is known about the trail. The supervisor at Shasta said the trail does not go through that national forest. Those at Plumas said they know nothing of a trail. I got the best results from Lassen. They know of the trail but evidently not the exact location or condition of it. . . . [Could someone] "pin point" the route of the trail through northern California if it does exist?

DONALD VAUGHAN

Sacramento, 16 April 1958.

EDITOR, *Pacific Discovery:*

One of the main reasons that I wrote the article was an attempt to restimulate interest in the Pacific Crest Trail. The late Mr. Clinton C. Clark, I think, had a fine, imaginative, and valuable idea in establishing this route in the Western wilderness and it is unfortunate that his years of work have been almost forgotten.

The sections that Mr. Vaughan cannot find do exist and so far as I know the "Tahoe-Yosemite" and "lava Crest" trails are traversable in their entirety. Between Lake Tahoe and the California-Oregon line they traverse sections of existing trails in Tahoe, Plumas, Lassen, Shasta, and Klamath national forests, and Lassen National Park. The fact that the U.S. Forest Service supervisors know nothing about the Pacific Crest Trail and that the supervisor of Shasta says it doesn't even run through his forest, shows how the Forest Service enthusiasm has been allowed to die. U.S.F.S. officials in the 1930's warmly welcomed Mr. Clark's idea and stated that they would coöperate to the full in establishing the through trail.

Mr. Clark's interesting book, *The Pacific Crest Trailway* (Pasadena, 1945), is now rare and hard to come by. However, it contains a set of complete, detailed sectional maps of the entire 2,200 miles of trail from Mexico to Canada. . . .

Possibly if enough people, such as Mr. Vaughan, become interested, we can bring the Pacific Crest Trail back to life and make it as used and well known as its Eastern twin, the Appalachian Trail.

WELDON F. HEALD

Tucson, 22 April 1958.

We regret that space did not permit us to publish this correspondence in an earlier issue. Let us hope, however, that Mr. Vaughan will find the missing trail next summer and give us a report on it.—ED.

"The Walls Come Tumbling Down"

EDITOR, *Pacific Discovery:*

Cannot agree with all the statements in the article "The Walls Come Tumbling Down" by Annette Richards Parent in the July-August *PD*. Apparently she has not been in the Big Bend National Park recently. I have! I spent four days there in March of this year.

The National Park Service has embarked on a program of bulldozing down all adobes as in-holdings in the Park are acquired. This includes the remaining adobes at historic Glen Springs.

What will happen at Castolon when the NPS takes possession two years hence is problematical at this time. If they follow the pattern established at this time, the Trading Post, the huge adobe barn and other adobe structures will be bulldozed flat!

Please, at least let's be accurate as regards "vandalism" in Big Bend! And at this time Yosemite National Park is in the process of removing *some* of its historic structures to the Wawona Pioneer Museum.

R. R. DELAREUELLE

Walnut Creek, Calif., 23 September, 1958.

A reply to Mr. Delareuelle's letter has been received from the superintendent of Big Bend National Park; it will be published in the next issue.—ED.

Inspired by "Granite Galleries"

SIERRA NEVADA CAMPSITE

(California Indian Archaeology)

Obsidian lies scattered black on gold
On sanded slopes, and granite mortars speak
For those who climbed these breathless trails, untold,
Uncounted years ago. Above the creek
On sun-infused plateau, near meadows bound
By wilderness they chose this summer site
And left worn pestles on the stone. Profound,
Yet simple people sought this pine-fresh height,
Walked proudly free beneath Sierra crests
And crossed gaunt, treeless passes from the east.
Now only long forgotten glass attests
Their skill, bone-chipped to pierce the fleeing beast.

We sift the dust, beginning to discern
Their souls, their bitter longing to return.

MARGARET G. HINDES

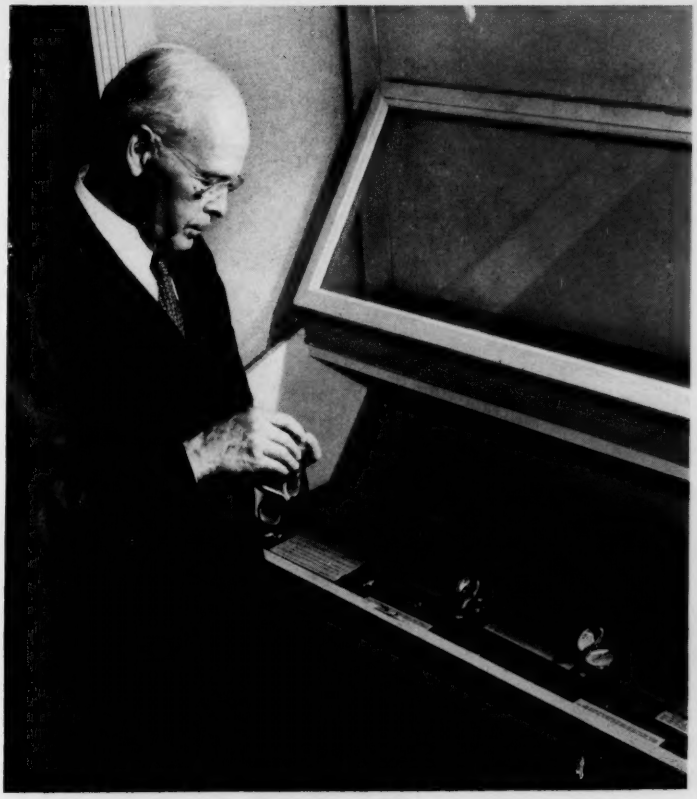
Ross, California.

Index to *Pacific Discovery*: Volume XI, 1958

ERRATA

Of course! There always are, although nothing big enough to brag about has come to our attention this year. But make no ERRATUM about it — Next year's *Pacific Discovery* as Christmas gifts will give your friends a year of pleasure — and we're not just bragging. Use the gift order form mailed with this issue.

academically speaking



(C.A.S. photo by Lionel T. Berryhill)

IN THE ACADEMY'S Hall of Sciences, one of the exhibits which finds most favor among visitors is the collection of clocks, watches, and other time-telling devices located opposite the entrance to Morrison Planetarium. It is a safe guess that the exhibit is also a favorite of the Academy's Honorary Curator of Horology, Dr. William Barclay Stephens of Alameda. He collected it.

The collection is the result of Dr. Stephens' longtime hobby but it is by no means the complete result; space was limited at the Academy and to avoid crowding, only selected horological items were put on display. Many of the timepieces Dr. Stephens has collected are not shown, but the examples on display are ample testimony of his long devotion to his hobby.

Although he is a retired surgeon, Dr. Stephens can hardly be called retired in any other sense of the word. He will be 90 years old in January but this does not keep him from his diligent collection of timepieces and continuous research in horology. Most recently, he traveled more than half the length of California seeking information on the early time-telling methods in California missions.

His interest in time and timepieces started scores of years before this recent research trip. Dr. Stephens was born January 4, 1869 in Paris, Kentucky. While he was still a boy, he discovered two old clocks in the attic of his Kentucky home, and his fascination with time was begun. The smaller of the two clocks Dr. Stephens was able to get working but the larger one was, in his word, "too much for my early horological efforts." He then converted it into a cabinet for his boyhood curios.

Temporarily, his interest in timepieces became dormant while he worked for his M.A. at Georgetown College in Kentucky and while he obtained his M. D. from Columbia University.

In 1893, Dr. Stephens set up practice in San Francisco. Twenty-five years later, in 1918, he moved his practice to Alameda to be closer to his home and family. He retired in 1947.

Several years after coming to San Francisco, he went back to Kentucky for a visit. In a storeroom in his former home, he found the clock-cabinet which had frustrated him many years before. He located the parts he had removed and shipped them and the cabinet to California. When he returned, he restored the clock. From that day, his hobby began in earnest.

"This clock of my maternal grandparents seemed to act as a magnet and gradually a large tick-tock family was gathered about it," Dr. Stephens said. As the years passed, this family grew until it included clocks, watches, and other horological items from all over the world. He also collected a horological library of about 300 volumes plus numerous journals which he later gave to the Academy's library.

As his time-telling collection grew, his interest widened. Besides old clocks and watches, all the methods of time-telling were embraced. At the Academy, the items selected for exhibit from this wide-ranging collection are contained in fourteen cases. Seven large cases are devoted to clocks —grouped according to the countries of their origin—and miscellaneous items. The remaining seven cases contain watches. In addition, two cases which stand in front of the exhibit display watches so they can be viewed from either front or back.

In installing the exhibit, an important concern was making it as attractive as possible. As Dr. Stephens is the first to testify, however, the prime concern was to make the exhibit of maximum educational value—to supply horological information to casual visitors and serious students alike.

During practically every school day, bus loads of school children are brought to the Academy. When they tour the horological exhibit and their interest is piqued and the questions start to fly, Dr. Stephens, if he is a witness, wears a look of what can only be called delight.

As his collection grew in both size and scope, Dr. Stephens said his hobby really began to "pay off." It led him into history, biography, geography, mythology, mechanics, and various branches of science; and it acquainted him with astronomers, other scientists, clergymen, philosophers, engineers, statesmen, and artisans among others. Somewhere along the way, he developed a second hobby of book-collecting and became a dedicated historian as well.

Dr. Stephens' association with the Academy dates to 1919 when he became a member. In 1946, the year his collection was first installed at the Academy, he became a Patron and in 1952, after his collection was placed in its present space in the Hall of Sciences, he was made a Fellow. Two years ago, in 1956, Dr. Stephens was declared a Benefactor of the Academy. He spends every Wednesday at the Academy arranging his collection and pursuing his horological interests.

About his hobby, Dr. Stephens says "These personal experiences have left me firmly convinced that every man should have a hobby and learn to ride it before he has reached middle life. . . . I regard it as a duty to prepare for an orderly, useful and enjoyable old age, and so to be able to profit by the leisure which has come; otherwise the last years are apt to be dour and mere vegetation."

No one who has ever met Dr. Stephens would ever think to describe him as dour, and as for preparing for old age, in the opinion of those who know him, Dr. Stephens will keep right on preparing for it rather than reaching it. Old age and the attitude of Dr. Stephens are two entirely different concepts; it is unlikely the twain shall ever meet.

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